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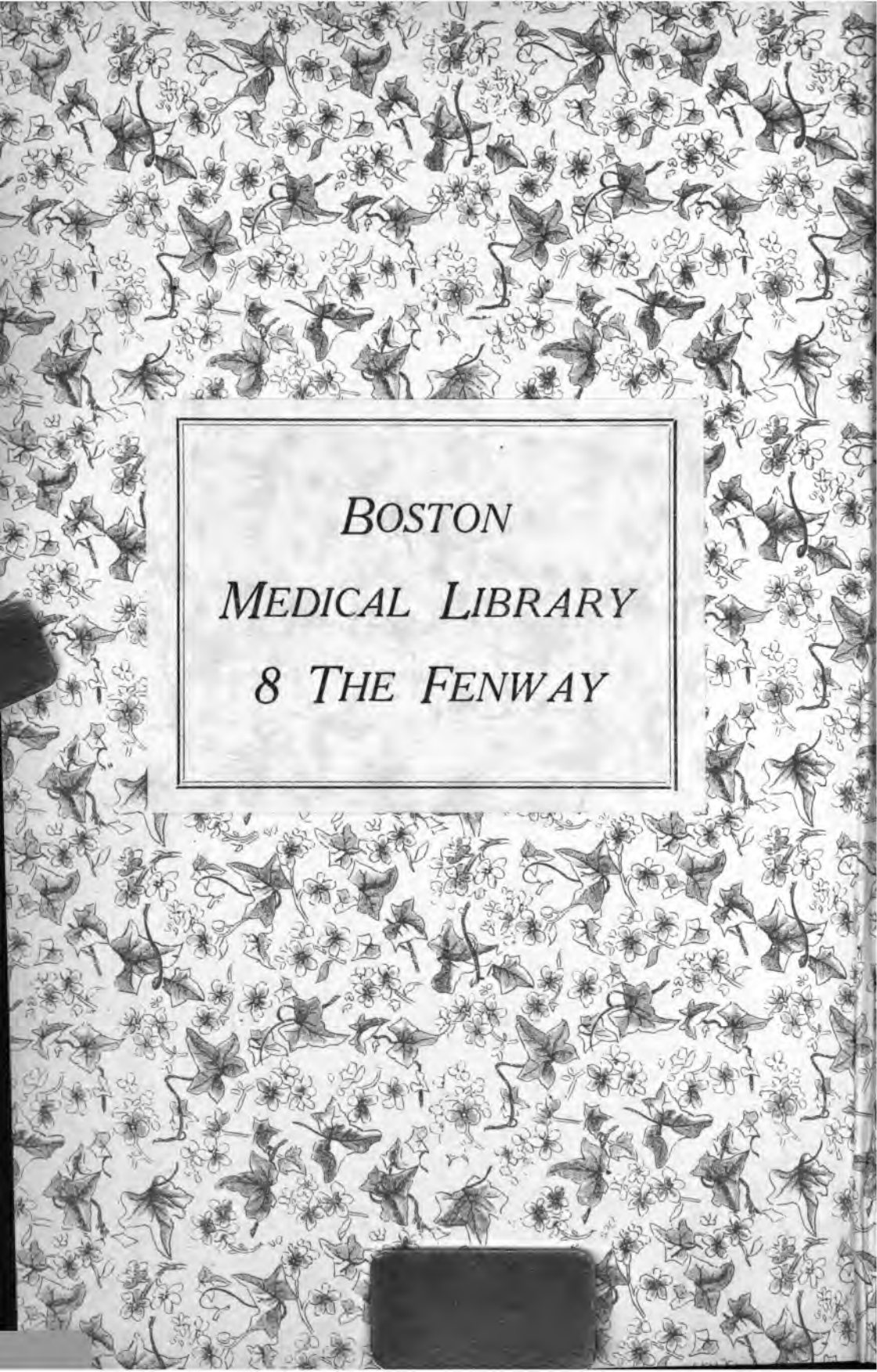
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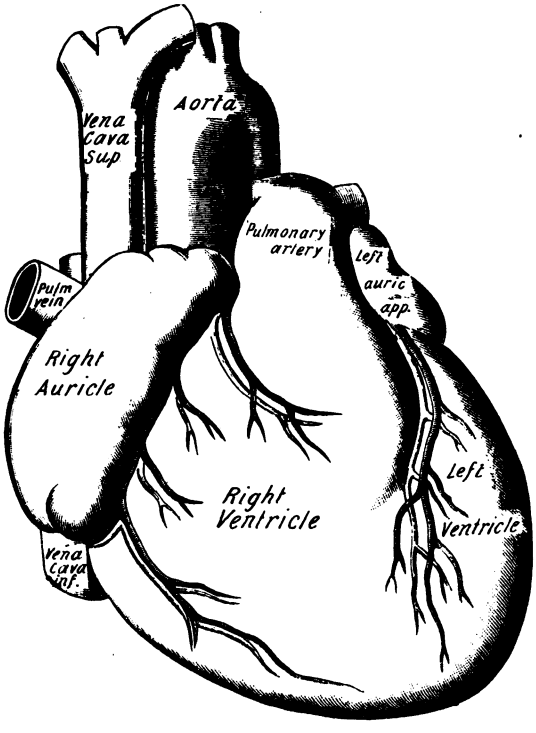
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Left auric app.
Pulm vein
Right Auricle
Left Ventricle
Right Ventricle
Vena Cava inf.

DISEASES OF THE HEART

BY

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PREFACE.

In presenting this work to the profession the author does it conscious of two facts: first, that its contents have merit, for more than a dozen years, guided by the precepts laid down in it, patients both private and clinical have been benefited; and second, that there are imperfections in it; for perfection is a quality that few attain.

An attempt has been made to present the different phases of this subject in as brief, concise and practical a manner as possible. Controversial topics have been avoided and doubtful subjects omitted. Much attention has been devoted to the general treatment, to make it as complete as possible, believing this to be the weak point in the practice of many physicians. In order that there may be but few repetitions, at different places in the book the reader has been referred to other articles for the indications for certain remedies.

In presenting the remedies called for in a disease but little attention has been given to their alphabetical order; on the contrary, they have been presented in the order of their importance as observed by the writer.

In preparing the work, the assistance has been derived from the standard works, current literature, private and clinical practice, to all of which the author extends thanks, as well as to the many kind friends who have spoken words of encouragement.

31 Washington Street, Chicago.
January First, Nineteen Hundred and One.

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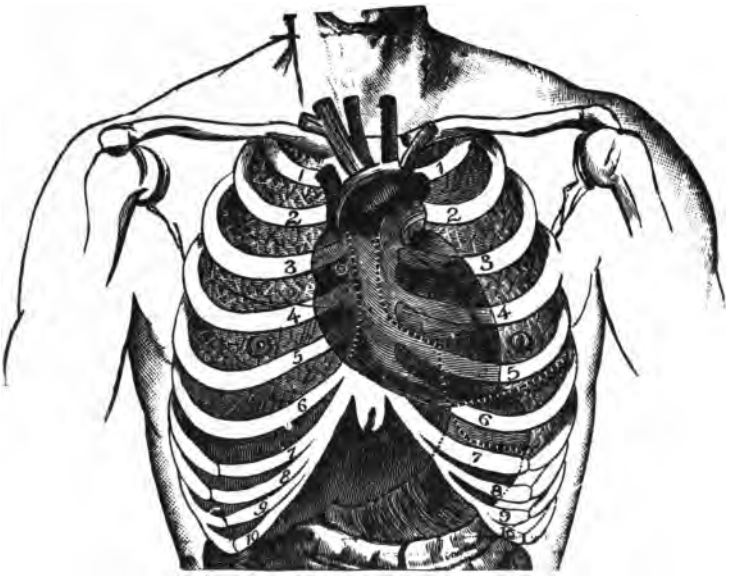
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CHAPTER I.

THE HEART,

Its relation to the Chest Walls and Surrounding Organs.

The heart occupies a central oblique position in the thoracic cavity, its base being upward, backward and to the right; while its apex is downward, forward and to the left. From an anterior view the right auricle and ventricle are all that can be seen, with the exception of a small portion of the left ventricle to the left.

The right auricle is behind the sternum, extending from a point one inch to the right of the right border of the sternum to the left border, and from a level with the third costal cartilage it extends downward to a point on a level with the seventh right costal cartilage.

The right ventricle is pyramidal in shape, its lower boundary resting upon the central tendon of the diaphragm; at the apex of this pyramid is the pulmonary artery, at its left border is a furrow where it unites with the left ventricle, while on the right side there is a furrow where it unites with the right auricle.

The left ventricle forms the left border of the heart as seen anteriorly, extending from the third left intercostal space down to the fifth intercostal space, where it terminates in the apex.

The appendix of the left ventricle lies directly behind the third left costal cartilage, close to its junction with the third rib.

The area that would be mapped out on the chest as indicating the position of the heart is spoken of as the area of deep cardiac dullness.

The only portion of the heart not covered by lung tissue is a part of the right ventricle. This is spoken of as the area of superficial cardiac dullness: and is indicated by a line extending downward to the left of the middle of the sternum, from the level of the fourth costal cartilage to that of the sixth; its left border is indicated by a line started from the first point and extending along the fourth cartilage to its junction with the rib, and then dipping downward and curving outward to the apex. The base is indicated by a line extending from the sixth right costal cartilage to the apex.

The heart is surrounded by the fibro-serous membrane, the pericardium; its base is held in position by the great vessels with which it is connected. Its posterior surface is flat, is formed by the left ventricle, rests upon the diaphragm, and extends from a level of the fifth to the eighth dorsal vertebra.

CHAPTER II.

CLINICAL EXAMINATION

Of the Patient and Semeiology.

The examination should be made systematically by inspection, palpation, percussion and auscultation. During this time the patient should occupy such a position that the light falls directly on the front of the chest, from which the clothing has been removed. It should be made when there has been quiet for some time, that all the organs may be observed in a condition as near normal as possible. The patient may occupy the standing, sitting or reclining position.

Inspection:—In a normal condition the two sides of the chest are symmetrical, and any departure from this should be examined. A bulging of the precordial space or deformity about the chest wall might cause a displacement of the heart; or a fixation of the thorax that might result from pleural adhesion or fibroid disease of the lungs. Any retraction of the intercostal spaces during cardiac systole should be noted as indicative of pericardial adhesions or cardiac hypertrophy with dilatation.

Apex Beat:—In the adult this is in the fifth intercostal space, just within the mammillary line. It is most apparent in children and in those with thin thoracic walls, while in those with an excess of adipose tissue and of short thorax it may not be evident; in a few cases it is directly behind the sixth rib and as a result is hidden. The position

of the apex beat varies in health according to the position of the patient, moving to the right or left as the patient chooses one or the other side in repose. It also follows the movement of the diaphragm in respiration. Protrusion of the thorax from the third to the seventh ribs and from the sternum to the nipple is present at times; the result of enlargement of the heart, which is due to hypertrophy, dilatation or a distention of the pericardium due to an exudate. If the exudate is very large there will be bulging of the intercostal spaces.

Increased force to the apex beat is noticed in the cardiac activity due to psychic conditions; in certain neurosis as Grave's disease; at the beginning of endocarditis; during early stages of fevers and hypertrophy of the heart. It is displaced to the outside of the mammillary line in right sided pleural exudate, the displacement being in proportion to the exudate; when marked, the apex beat may be in the fourth intercostal space and at the axillary line. This tilting of the apex beat upward is due to the inferior vena cava being drawn downward by the depression of the diaphragm. In cases of left sided pleural exudates and pneumo-thorax the apex is either hidden altogether or displaced to the right. In many of these cases a cardiac impulse will be seen to the right of the sternum from the third to the fifth spaces and corresponds to the base of the heart. A displacement of the apex beat is noticed to the right or left when the corresponding lung is retracted. Any displacement of the diaphragm upward or downward will produce a corresponding displacement of the heart. At times there is a complete inversion of the viscera, and in these cases the

apex beat is found upon the right side. The cardiac impulse is diffused where there is retraction of the border of the lungs, due to superficial breathing, contraction of the lungs or enlarged heart. In cases of hypertrophy of the left ventricle, the apex beat may be outside of the mammillary line, and if the ribs and cartilage are elastic they are lifted with each pulsation.

Epigastric pulsation is observed in thin individuals as a result of the pulsations of the abdominal aorta, and is most pronounced when the heart's action is vigorous as in certain neurosis; when the stomach is distended as after a meal or when some new formation develops anterior to the aorta. Pulsation in the hepatic veins and hypertrophy of the right ventricle also produces it. An aneurysm of the ascending aorta will produce a pulsation in the first and second intercostal spaces to the right of the sternum. While a pulsation in the first intercostal space on the left side, indicates an aneurysm of the arch of the aorta. A pleuritic effusion may participate in the cardiac movements, and a pulsation be noticed as a result. A pre-systolic or systolic pulse may be noticed in the cervical veins, indicative of tricuspid incompetency.

Palpation:—This assists and confirms inspection, and is best accomplished by placing the hand over the precordial region in such a manner that the tips of the fingers locate the apex beat, and the palm of the hand is over the heart. In this method not only the apex beat, but also any friction rubs and thrills are at once conveyed to the hand. In the normal heart a slight impulse is felt which may be confined to the apex or extend over a larger area,

depending upon the extent to which the lungs cover the apex. At times, on account of pericardial exudates or adipose tissue, the apex beat may not be palpable. Hypertrophy of the heart is attended with an increased impulse; and a degeneration, with a diminished impulse. The hand detects thrills which may be either exocardial or endocardial. If connected with the pericardium it will be rubbing, scraping and intermittent in character. While the endocardial thrill is continuous and purring in character, and either pre-systolic, systolic or diastolic in time; exocardial thrills are irregular.

The exocardial murmurs may not be developed until the fingers are pressed into the intercostal spaces, and are often obliterated by the patient taking a long breath. A thrill at the apex is usually felt just before the first sound (presystolic) and indicates a mitral stenosis; a distinct systolic thrill felt at the second intercostal space on the right side of the sternum indicates stenosis of the aortic valve. Thrills are not common with insufficiency nor in disease of the valves of the right side of the heart. But a communication between the two sides of the heart often gives rise to a pronounced thrill. The gravity of the disease must not be judged by the loudness of the murmur or the clearness of the thrill.

Percussion:—This is of no service apart from defining the size of the organ and its relation to surrounding structures. The area of flatness or absolute dullness of the heart corresponds to that portion of the right ventricle which is not covered by the lungs, and is triangular in shape; when the lungs are at rest its right border is at the middle

of the sternum, while the left border begins at the upper border of the fourth costal cartilage, from which point it curves outward and downward, crossing the fourth intercostal space and the fifth rib until it reaches the fifth intercostal space, at which point it curves slightly inward until the cardiac dullness blends with the hepatic dullness. This makes an area of about two inches in the vertical by one and one-half inches in breadth, which varies slightly during inspiration and expiration. The size of the area of deep or relative cardiac dullness varies with all the changes in the size of the heart.

In hypertrophy and dilatation the relative dullness is increased in certain directions; in case of the right side the transverse diameter is mostly increased, while in those of the left side, it is the vertical diameter that is mostly increased. The area of superficial dullness is increased as a result of pericarditis, hypertrophy and dilatation. To find the upper border of absolute cardiac flatness one should commence at about the second costal cartilage and percuss downward; usually, at about the middle of the fourth costal, the pulmonary resonance gives way to cardiac dullness. To find the left border we begin at the mammillary line and the fourth rib, and percuss in parallel lines from this to the apex. The left border is curved. At the lower border the cardiac dullness is continuous with that of the liver.

Absolute cardiac flatness changes with respiration, becoming smaller during inspiration and larger during expiration. The area of cardiac flatness is increased in those who have breathed superficially for a long time, and in cases of large accumulations

of fat in the anterior mediastinum and pathological condition of the lungs. The area of flatness is diminished in deep inspiration, emphysema, collections of fluid and gas in the plural sac, pneumothorax.

Auscultation:—By auscultation we become familiar with the normal and abnormal cardiac sounds. The first sound of the heart is produced by the closure of the auriculo-ventricular valves, the contraction of the ventricle and the impulse of the apex of the heart against the chest wall. The portion of the first sound produced by the mitral valve is heard best at the apex of the heart; while that produced by the tricuspid valve is heard best at a little to the left of the lower end of the sternum. It is low in pitch, of long duration and booming in quality. It is systolic in rhythm, being synchronous with systole of the ventricle, the apex beat and carotid pulse. It is preceded by a long pause and followed by a shorter one, after which the second sound occurs. This is produced by the closure of the aortic and pulmonary valves, (semilunar) and vibration of the surrounding structures.

The sound produced by the aortic valve is heard best in the second intercostal space, to the right of the sternum; while that produced by the pulmonary is heard best in the corresponding space to the left of the sternum. The second sound is loudest at the points just mentioned and is it heard all over and beyond the cardiac area. The quality of the second sound is sharp and the pitch higher than that of the first sound, while its duration is shorter. The relation of the sounds with their intervening pauses have been represented as "lubb"—"dubb"—. The

loudness of the sounds are modified by exercise, rest and the thickness of the chest walls.

The sounds are strengthened by such pathological conditions as Basedow's disease and febrile conditions. They are weakened from enfeebled conditions of the heart, great loss of blood and feeble condition of the patient. It should be remembered that adipose tissue or other developments might intervene between the heart and chest wall and muffle the sound. Arrhythmia is often the result of the degeneration of the cardiac muscle.

When a single sound is increased, the others being normal or weakened, the increased sound is said to be accentuated. This is usually caused by the closure of the valves under an increased blood tension. Reduplication of either sound may take place when the valves producing the sound do not receive their greatest tension at the same time. The diastolic sound is more frequently duplicated than the first, or systolic. It is usually temporary but may be permanent and it is not peculiar to any particular lesion. A metallic ring to the first sound at the apex is usually indicative of cardiac hypertrophy, or increased cardiac activity in a normal heart; with the second aortic sound it usually indicates atheromatous conditions of the arteries. Pneumo-pericardium, pneumo-thorax, a large cavity in the lung with smooth walls close to the heart and a gaseous distension of the stomach may give a metallic ring to both sounds at the apex.

Cardiac Murmurs:—Those having origin within the heart are said to be endocardial, and are divided into organic and inorganic. The former are due to anatomical changes of the valves; the

latter to changes in the cardiac muscle, anomalies of the blood and general diseases. The organic endocardial murmurs may be systolic or diastolic, and may be upon the right or left side of the heart. When systolic and upon the left side of the heart they are heard with the first sound. When heard best at the apex it indicates mitral regurgitation. With it there are indications of pulmonary, renal and hepatic congestion, and often edema of the feet and ankles. The left heart is enlarged and there is accentuation of the second pulmonic sound; the murmur is apt to be soft and blowing in quality. Its intensity does not indicate the severity of the lesion. Its area of greatest intensity is at the apex. It is propagated to the left of the apex and is often heard at the lower angle of the scapula; but it is not transmitted to the carotids, and seldom to the base of the heart. This is the most frequently met with of all cardiac murmurs.

An aortic systolic murmur is due to obstruction at the aortic orifice, or a marked dilatation of the aorta just beyond the orifice. The pulse is small and wiry but regular, unless there is great cardiac embarrassment. A thrill is often present over the aortic area. Both the aortic and pulmonic second sounds are feeble. The murmur is harsh in quality with the first sound and its area of maximum intensity is in the second intercostal space to the right of the sternum; sometimes it is in the left; it is propagated to the vessels of the neck and towards the apex, and may be heard at the fourth dorsal vertebra.

A systolic murmur on the right side of the

heart is due either to tricuspid regurgitation or pulmonary obstruction. With tricuspid regurgitation there is apt to be pulmonary disease or some disease of the left side of the heart, and congestion of the brain and abdominal organs; pulsation of the jugular and hepatic veins are observed as a result. The murmur is blowing in quality, replaces the first sound of the heart, has its area of maximum intensity over the tricuspid area at the end of the sternum and has but a limited area of propagation.

The pulmonic systolic murmur is due to obstruction of the pulmonic orifice. Accompanying it there is evidence of venous engorgement and enlargement of the right heart; the pulmonic second sound is weak. The quality of the murmur varies, but is usually harsh; it accompanies the first sound, its area of maximum intensity is in the second intercostal space to the left of the sternum. It may be propagated towards the left shoulder but not in the direction of the similar lesions at the aortic orifice.

A diastolic murmur on the left side of the heart is due either to a mitral stenosis or an aortic regurgitation. With the mitral diastolic murmur the pulse is small and there is a purring presystolic thrill which is most distinct at the apex. There is pulmonary congestion, enlargement of the left auricle, and accentuation of the second pulmonic sound if the right ventricle is hypertrophied. The murmur is harsh and grinding in quality, long in duration, occurs before, and terminates with the first sound, and has its area of maximum intensity one-half an inch above the apex beat. It has a

limited area of propagation, not heard to the left of the apex nor in the vessels of the neck.

With the aortic diastolic murmur the pulse is full, strong and drops away from the finger, "Corrigan's pulse." There is a marked pulsation of the carotids, extending to the angle of the inferior maxillary and capillary pulse is often noticed. The left heart is hypertrophied. The murmur is soft, blowing and often musical in quality. In rhythm it accompanies, replaces or follows the second aortic sound. Its area of maximum itensity is in the second intercostal space to the right of the sternum; it may be in the second intercostal to the left of the sternum or at the xiphoid cartilage. Is has a wide area of propagation down the sternum: to the epigastrium; to the apex; to the carotids; radial and femoral arteries; and at times, down the spine.

A diastolic murmur on the right side of the heart may be due to tricuspid obstruction or pulmonary regurgitation. With the tricuspid diastolic murmur there are symptoms of venous engorgement. The murmur is harsh in quality and presystolic in rythm. It is heard over the lower part of the sternum and is not propagated, except slightly toward the base.

With the pulmonic diastolic murmur there is evidence of venous engorgement and pulmonary disease. The murmur is soft and blowing in quality, it accompanies or replaces the second sound, has its area of greatest intensity in the second intercostal space to the left of the sternum, and is propagated towards the xiphoid cartilage. Functional cardiac murmurs are not constant, have no definite line of propagation and are always limited

to the cardiac area and are not attended with enlargement of the heart. The anemic murmur is attended with symptoms of anemia, has the venous "hum" in the cervical veins. Pericardial friction sounds to and fro are superficial and are heard over but a limited area. Pleural friction sound ceases when the breath is held.

The Pulse:—The arterial pulse is a wave of increased pressure passing from the center to the periphery of the arterial system during cardiac systole, and is dependent upon the amount of blood, the energy of the heart and the resistance of the blood vessels.

Inspection:—In children the pulse is only visible in the carotids and possibly the temporal and radial arteries; while in the adults it may be seen at different points. In arterial sclerosis, the temporal and some of the superficial arteries of the extremities may be seen pursuing a tortuous course. In cases of aortic incompetency, the excessive pulsation of the carotids and superficial arteries are easily recognized.

Palpation:—The arterial pulse is most satisfactorily papated in the radial artery, immediately above the wrist and between the flexor tendons and the prominent ridge of the radius. The patient should be sitting or reclining and the arm supported at the time. The observer should use three fingers in such a position that the index finger is nearest the heart, by this method the condition of the artery, the arterial tension and other points may be ascertained readily. When atheromatous changes or aneurysm are suspected, it will be necessary to examine both radial arteries at the same time.

Sphygmograph:—This will be found of service in supplementing the finger of the observer, and will bring into prominence and demonstrate certain qualities and points of the pulse not clear before.

It should never be taken as a substitute for palpation, as tracings taken by different instruments, or even by the same instrument, but by different operators, differ wholly in their appearance.

In using this instrument the patient should be in an easy position, either reclining or sitting; the arm should rest easily, being supinated; the wrist bent backward, and the fingers partially flexed. The line of the radial artery should be indicated by a pencil. The clock work having been wound up it is then applied to the wrist in such a way that the button is over the radial artery. The paper having been cut to proper dimensions is then blackened by holding it in the smoke of burning camphor. It is then introduced and the pressure



FIG 2.—TYPICAL PULSE WAVE. (After Sansom.)

adjusted to bring out the greatest amplitude of movement; the works are then started. To preserve the tracing it should be dipped into a saturated solution of gum dammar in equal parts of gasoline and benzine.

The sphygmograph tracing of the normal pulse is indicated by a sudden line of ascent, which is followed by a more gradual line of descent, the latter being interrupted by two undulations.

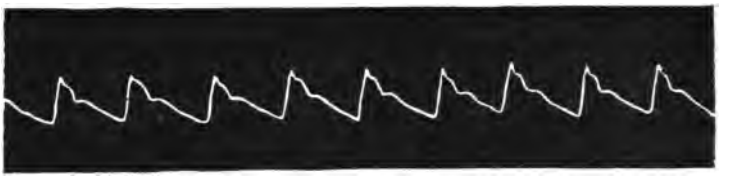


FIG. 3.—NORMAL PULSE TRACING.

The line of ascent or percussion wave is the result of the entrance of the blood from the left ventricle into the artery, where it produces a wave of increased pressure. The line of descent indicates the gradual lessening of the arterial pressure following the cardiac systole. The first interruption is believed to be due to the current of blood passing along the artery. The second interruption is due to an outward wave of increased pressure resulting from a recoil of blood against the aortic cusps.

When palpating the pulse the condition of the artery should be recognized. While in health it gives a sensation of being yielding and elastic under the finger, in febrile conditions it does not give this sensation, but is too yielding. Again it is hard, and rolls under the finger in advancing years; in arterio-sclerosis; in chronic nephritis and cardiac disease. In these cases the artery is not only hard, but by passing the finger along the course of the artery it will be found to be tortuous. The fullness of the artery should be noticed.

The pulse rate varies in health, being more frequent under the following conditions: in the female;

in infancy; during childhood; in the upright attitude; in high temperature; during the latter part of the day; often from eating or drinking, and during mental or physical exertion. It is also increased from fevers, nervous diseases, and in almost all the organic heart diseases. It is slower than normal during the latter stages of fevers, jaundice, renal disease, in affections of the myocardium and meninges.



FIG. 4—PULSE OF AORTIC REGURGITATION.

A high tensioned pulse should always be investigated carefully, as it is often indicative of conditions that shorten life. It is a relative term and is indicated by degrees of fullness of the arteries between the beats. In investigating it three fingers should be used, and by pressure, first with the one nearest the heart, then the second and third, see how many fingers it requires to flatten the artery and control the wave. Being satisfied that such a condition exists, careful search should be made for the cause or causes, which is often found among the following: plethora, capillary contraction, resistance, old age, gout, diabetes, renal diseases, alcohol, sedentary habits and constipation.

A low tensioned pulse is one where the artery can be easily effaced between beats and starts into existence by the pulse wave. The pulse may be large and sudden or small and easily suppressed.

It is found as a result of fatty degeneration of the heart, obesity, warmth with moisture, warm food and drinks, fatigue, anxiety and debility. In cases where atheroma and aneurysm are anticipated, the radial pulses should be palpated and compared simultaneously. In aortic stenosis the initial percussion wave is slight and gradual while the pulse wave is prolonged. The artery is small and full between the beats. In aortic incompetence the



FIG. 5—PULSE OF AORTIC STENOSIS.

pulse wave is sudden and forcible, but short and not sustained, its cessation being abrupt, giving what is known as the "water hammer" or "Corrigan's pulse." The artery is large but empty between the beats. In mitral stenosis the pulse wave is long, the artery is small and full between beats; the tension being higher than would be expected. In these three the pulse is regular until compensation fails. In mitral regurgitation the pulse is usually irregular both in force and frequency.

The dicrotic pulse is a common feature of a low arterial tension. Usually upon palpation of the radial artery but one pulsation is felt to each cardiac systole; but when dicrotism is present a second pulsation is felt immediately following the first. In this condition the tidal wave is absent while the dicrotic notch is exaggerated. When, in a sphygmographic tracing, the dicrotic notch touches the

base line, it is said to be fully dicrotic; but when the notch sinks below the base line it is said to be hyperdicrotic. This condition may be produced by a hot bath and it is a clinical feature during the later stages of acute febrile diseases.

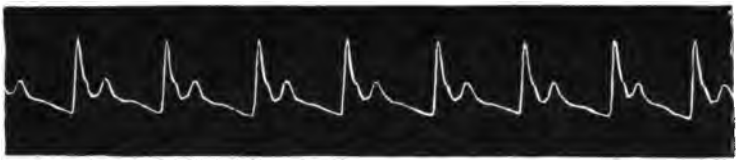


FIG. 6—DICROTIC PULSE IN PATIENT CONVALESCENT FROM TYPHOID FEVER.

Symptoms:—The digestive system is frequently deranged as a result of circulatory disturbance. In venous stasis there is often nausea, vomiting and diarrhea, and at times hematemesis which results from a chronic catarrh and passive congestion. The patient is often troubled with meteorism, jaundice and hemorrhoids, on account of the interference with the return of blood through the hepatic veins.

Changes are present in the blood and glands. Anemia may present the same blood changes as at any time, as regards the reduction of the hemoglobin; the number of red blood corpuscles; at times, an increase, again, a decrease of the white corpuscles. In cyanosis the blood is darker than normal, its specific gravity is increased as well as the amount of hemoglobin and the number of both red and white blood corpuscles. The reason for these changes are not at present clear, but the corpuscles suffer a lack of proper oxygenation as a result of the venous stasis; their duration is increased on account of their function being lessened; and if they are produced as fast as before, it is evident

that their number will be increased. The spleen is interfered with as a result of the changes in the portal circulation, and it is enlarged.

The symptoms connected with the respiratory system, while of importance in estimating the condition of the circulatory system, are not diagnostic of any particular derangement of this system. Dyspnea or breathlessness indicates a lack of oxygen in the blood supplying the respiratory center. It may consist of a simple breath hurry, polypnea, or it may be such that the patient must sit up, orthopnea. It may be due to a lack of oxygen or an excess of carbonic acid; in the former the dyspnea is intense, while in the latter the excess of carbonic acid soon brings respiration to an end. The dyspnea may result from an enfeebled condition of the heart, due to myocardial and valvular changes, to anemia, edema of the lung, hydrothorax and certain blood changes as the uremia in renal disease and the glycemia of diabetes.

The respiratory rhythm may take on a periodic character that is known as the "Cheyne-Stokes." The normal respiratory rhythm is interrupted by periods of arrested respiration, there being an alternation in the periods of activity and repose. It may be observed only during sleep, or during both sleeping and waking hours. In watching such a case, it is observed that the respiratory movements gradually increase in extent and rapidity up to a certain point, and then gradually decline until a condition of apnea ensues, then a feeble respiration, and the cycle is again gone over. This is noticed in connection with brain, renal and cardiac diseases. And while noticed at times in those who are

healthy, it is considered a grave symptom when appearing in connection with the diseases mentioned.

Yawning and hiccough are at times annoying conditions that appear in connection with heart disease. Cough is frequently the result of heart disease, when it may be due to bronchial catarrh; edema of the lungs or transudation into a pleura. The expectoration is more purulent if due to bronchial catarrh, and of a frothy or serous character if due to edema of the lungs. Hemoptysis is a frequent symptom of heart disease and especially of the mitral valve.

There are certain changes noticed in the skin; the first is the color, pallor is present as a result of such lesions as aortic incompetence and simple cardiac weakness. In aortic incompetence there is frequently an alternation of flushing and pallor that is known as the capillary pulse. Another change in connection with the skin is that of cyanosis which is seen in cases of heart failure, valvular disease and congenital defect of the septum. Frequently there is a greater degree of moisture than is natural. Swelling, due to a loss of balance between the transudation and reabsorption of the fluid bathing the tissue, is a frequent symptom. This loss of balance has many causes, but chief among them are obstruction to the return venous flow, and loss of aspiratory power of the heart.

The kidneys suffer as a result of the backward pressure, a cyanotic induration resulting. The amount of urine secreted is diminished, the specific gravity is raised, the color deepened and albumen is frequently present.

Disturbance of the circulation interferes with the reproductive system. Chronic mitral lesions with anemia are apt to be attended with amenorrhea in the female; while menorrhagia and leucorrhea are common in those cardiac lesions that produce venous stasis.

Pain due to cardiac disease is seldom referred by the patient to the heart, but usually to the surface of the chest. It varies in degree from a simple uneasiness to the angina pectoris. It is usually made worse by exertion, excitement and a full meal. The pain is more frequent on the left side than on the right side. This is attributed to the greater frequency of disease connected with the left side of the heart, the coronary artery and the aorta. The pain may be felt on the anterior or posterior portion of the chest or may extend to the shoulder and arm. Toxic conditions, the result of tea; coffee; tobacco; lithemia or glycemia, may produce pain. Neuritis of the cardiac nerves has been demonstrated in connection with disease of the aorta and coronary arteries. In the majority of cases of cardiac pain, organic lesions of some form are present. Where there is failure of the muscular valves of the heart there is often a feeling as though the heart would stop.

CHAPTER III.

CARDIAC PATHOLOGY.

The etiology of cardiac pathology divides itself into those cases that are inherent and those that are acquired. A limited experience is sufficient to prove to any one, that not only are children born with defective hearts, but children of parents who have heart disease are prone to develop similar lesions. Age is an important factor; acute pericarditis and endocarditis are diseases of the youth, and are responsible for many cases of mitral disease; while later in life appear the degenerative changes, as arterio-sclerosis, aneurysm, and the fibroid degenerative changes of the valves, especially the aortic.

Palpitation of the heart is frequent in early life, while alteration in its rhythm, due to organic disease, appears later in life. Men suffer most from diseases of the aortic orifice, while women from those of the mitral; occupations that demand prolonged physical exertion develop sclerotic changes, while those that are indolent develop fatty degenerations.

There is no doubt of the affinity of the rheumatic poison for both the pericardium and endocardium; while gout interferes with the heart's action more by the degenerative changes wrought in the arteries, especially the coronary, than by its direct action upon the heart.

The acute infectious diseases have their effects upon the structure of the heart. Our knowledge of bacteriology has made clear how it is possible for

these effects to be brought about. Pathological conditions in distant organs, that interfere with the circulation, have most injurious effects on the heart.

Degenerative Changes:—The heart is subject to various forms of degeneration. One of the most common is that known as cloudy swelling. The effects of this are noticed as a result of those acute infectious and local diseases that produce a profound impression upon the system by the toxines generated, which modify the protoplasm; as a result, a swelling of the cells or fibres takes place; the latter becoming granular and cloudy, while their nuclei become less distinct, and the heart as a whole is enlarged and presents a pale, cloudy appearance on section.

Fatty heart is a term employed in speaking of three different conditions. In the first there is an extra accumulation of fat in those places where it is found normally. If excessive and long continued, it is bound to lead to functional and possibly grave, structural changes in the myocardium. In the second class, there is a deposit of fat in places where it does not naturally exist. It develops in the intermuscular septem and between the muscle fibres, and extends to the connective tissue underlying the endocardium. In the third class, the fat is formed at the expense of the protoplasm of the cell, and replaces the muscular tissue. The change is brought about by changes in the blood, the result of certain cachexias, severe hemorrhages, pyrexia and toxic conditions. The tissue of the organ, or portion of the organ affected is paler and softer than normal. During certain acute diseases there is absorbed something that has the power of

producing coagulation; and as a result, the tissue breaks up into hyaline degeneration.

While the tissue of the body generally undergoes a loss of bulk in advanced age, the heart usually goes on increasing in size; but during certain wasting diseases and cachexias it undergoes atrophy, due either to a diminution in size or number of the cell elements. In the senile changes that lead to fibrosis or atheroma, there is often deposited the carbonate or phosphate of calcium, which is favored by a weakening of the circulation. As a result of certain cachexias, marasmus and senile changes, there is developed a pigmentary or brown atrophy. This is due to the deposit of pigments in different organs.

The nature of the process of reaction of tissue to irritation, varies in degree, but not in type, according as it is the serous, muscular or connective tissue that is involved. These processes may be exudative or proliferative, the former being noted during the early stages and is attended with leucocytes and red blood corpuscles; the latter occurs later and is attended with a multiplication of the connective tissue and endothelial cells. They also vary, according as the seat of the process is on a membrane rich in blood vessels, as the pericardium; or having few blood vessels, as the endocardium; or the myocardium where the muscular tissue is well supplied with blood. On the pericardium the fluid exudate may coagulate and form a membrane on the surface; if an extra amount is thrown out on account of some bacterial activity, it does not coagulate but remains serous; while if there is greater emigration of leucocytes

with little tendency to coagulation of the serum, it becomes purulent.

The endocardium covering the valves has but few blood vessels and as a result the process is greatly modified; and, while the exudation is sufficient to lead to fusion of the cusps, it is but slight when compared with that from the pericardium. The changes in the myocardium are modified by the tissue; the muscle cells are swollen, and lose their transverse striation, the nucleus is enlarged, the whole cell is changed in outline and is softer than normal. In the more chronic changes of the serous membrane there is thickening and contraction of the newly formed fibrous tissue, and sometimes, a deposit of lime salts; while in the myocardium there is hyperplasia of the connective tissue, which gradually leads to a disappearance of the muscular tissue. There is no doubt that a serous membrane such as the pericardium may recover from the effects of a pericarditis, and the endocardium may recover from an endocarditis to an extent; but any structural change of the myocardium is never recovered from.

When the organ increases in size without any structural change, the process is known as hypertrophy. It is recognized that in health the heart has a reserve strength, its task being below its possibilities and as a result, when an extra strain is brought to bear upon it, it can adapt itself to the emergency; first, by the reserve energy and then by hypertrophy which may be sufficient to overcome all signs of disturbance; if not, dilatation follows.

Disturbances of the circulation owe their origin

to causes operating either on the heart, the blood vessels, or the blood itself. Those operating upon the heart may do so from without, as in diseases of the pericardium; or from within, as in diseases of the endocardium and also in myocardial degenerations. From whatever cause the heart is weakened, both in its aspirative and expulsive action, on account of its reserve force it is capable of overcoming the resistance up to a certain point by a compensating hypertrophy; but hypertrophy is only possible when the nutrition of the heart is good.

Of the disturbances connected with the blood vessels, a diminished elasticity and contractility, the result of advancing years, is the most important. Disturbances connected with the blood are varied in their origin and effects. In any condition that lowers the nutritive elements of the blood, impairs the heart's energy and gives rise to a loss of tone in the arterial walls, dilatation must result sooner or later.

CHAPTER IV.

THERAPEUTICS.

As every organ demands a normal blood supply, it is evident that the treatment must include not the heart alone, but all organs of the body. The one cardinal indication for treatment is a loss of the equilibrium that exists in a normal state of the circulation. From the deranged hydrostatic relations there is an excess of blood in the veins and a deficiency in the arteries; and as a result of this venous stasis, there is catarrh of the alimentary canal, the blood is imperfectly oxygenated and the kidneys do not eliminate the waste products. The nervous system suffers from the deranged functions of the organs, and there arises several groups of symptoms that constitute the basis of treatment. The heart has a reserve force that neutralizes all mechanical disturbances up to a certain point, should the obstruction continue, there is a dilatation of the great arterial trunks, while if the stress is still continued, it is met by hypertrophy of the heart and later, dilatation takes place.

Rest:—Of all the agencies at our disposal for the relief of organic heart lesions, this is one of the most important. It is indicated in acute pericarditis and endocarditis, in myocardial degeneration, both fatty and fibroid, and in all forms of myocarditis. In cases of pulmonary lesions when there is a break in the cardiac compensation it will be found of great service, also in angina pectoris, where there is an aneurysm of the thoracic aorta, and in cases of senile degeneration of the heart.

Change of Temperature:—Many of these patients are susceptible to changes in the temperature, and must be protected or they will suffer from recurrent attacks of rheumatism. They should wear flannel underclothing the year round. They should not sit on the damp ground; should the clothing become damp it should be removed at once. Care should also be taken after perspiring that there be no chilling. These precautions should not prevent the patient from taking exercise and having the benefit of out door life. If it is possible a mild, dry, bracing, equable climate, where the patient may be in the open air, is to be preferred; but in the great majority of cases it is impossible for the patient to leave home, and it then becomes a question of the best possible home life for the case.

When it is possible to select a residence it should be at a moderate elevation, there should be a gravelly or sandy soil, the sunshine should be above and the rainfall below the average; the water used should be soft. The house should have exposure to the south and be protected on the north and east, and should not be on an elevation sufficient to overtax the heart in reaching it.

The diet should be liberal and varied, but no excesses should be allowed. The three meals should be about equal in size and at regular intervals. The farinaceous and vegetable articles of diet should be taken in due proportions, and an excess of highly nitrogenized foods should be avoided as they leave a residue that accumulates in the blood and imposes extra work upon the heart.

Stimulants are needed in but few cases; when taken, they should be as part of a meal.

It should be ascertained whether or no the movements of the bowels are sufficient at all times, as constipation soon leads to flatulence, palpitation and a higher arterial tension; due to the toxic material in the blood, the result of retained fecal matter. It is seldom necessary to resort to cathartics, as it can usually be corrected by diet, exercise, massage, etc.

Anemia is to be avoided as it always favors those conditions that are pernicious in the treatment of heart disease. The management of these cases resolves itself into a choice of residence, change of air from time to time, food, exercise, etc.

Sleep is frequently interfered with by the circulatory disturbance and insomnia results. This must be avoided by the employment of such means as will bring rest and sleep. While these patients should not have their minds taxed, yet their mental faculties should be employed. If confined to their room it should have a southern exposure in order that plenty of light and sunshine may enter it. Attention should be given to the skin, lungs, kidneys and bowels, that everything may be as near normal as possible.

At times when the subcutaneous tissue is very edematous and the internal remedy is unable to remove it, scarifications of the skin about the ankles, allowing drainage, is often of great service, although attended with a degree of discomfort from soaking of the bed clothes; but the latter may be overcome by the use of needles and tubes that carry the fluid to a receptacle. These operations must be done under antiseptic precautions.

In considering the question of exercise, the constitution, habits and strength of each case must be

considered. If the patient is able to go about, the graduated active exercise as prescribed by Oertel may be adopted; if unable to go around, the resistance exercises of Schott are to be preferred. In the grave forms of heart disease with renal inadequacy, absolute rest in bed for a few weeks, followed by gentle massage and cautious passive movements, are of service.

The exercise recommended by Oertel consists of systematic graduated muscular exercise carried out at about two thousand feet elevation above the sea level. The task is walking up an incline once a day to a certain point, the distance, pace and elevation being increased from day to day. With the exercise, the diet is carefully regulated and the amount of fluid taken is limited. The exercise is adapted to the patient, and the object it is hoped to attain is, to bring about a hypertrophy of the cardiac walls, to lessen the amount of blood by favoring elimination and restricting the amount of fluid taken. Its field of usefulness is in fatty hearts without degeneration or involvement of the coronary arteries; in cardiac dilatation and valvular diseases even when compensation is broken down.

The treatment of circulatory disturbances by means of baths and exercise as practiced by Schott of Nauheim, is beneficial in certain classes of troubles. While there is much benefit to be derived from a residence at Nauheim, where one can enjoy a quiet and regulated life under the direction of those in charge of the baths, yet they can be substituted at home, and great benefit result from them. The baths consist of brine and effervescent baths.

To prepare the weak brine bath with which the treatment should commence, one pound of sodium chloride and one and one half ounces of calcium chloride are dissolved in ten gallons of water at a temperature of 95° F. The duration of the first bath is about fifteen minutes. Each succeeding bath should be rendered a little stronger by the addition of these salts, until three pounds of sodium chloride and four and one half ounces of the calcium chloride are being used to each ten gallons of water. As these ingredients are being increased, the temperature should be gradually lowered until it reaches 85° F. and the duration of each bath increased until it lasts from fifteen to twenty minutes.

The bath should not be taken oftener than every other day. Usually, in about two weeks, though it may require a longer period, the patient can tolerate the effervescent bath, which is prepared by adding to the full strength brine bath two ounces of sodium bicarbonate, and after mixing all thoroughly, three ounces of hydrochloric acid are added just before the bath is taken. It is best to have the acid in a bottle and remove the cork at the bottom of the bath, distributing the acid through the lower layers of the water. These baths are rendered more powerful each time, until eight ounces of the bicarbonate is being used and twelve ounces of the acid to each ten gallons of water.

The patient should always be wrapped up and lie still for some time after each bath. If not used judiciously the baths produce restlessness aud sleeplessness with loss of appetite and strength. When beneficial the pulse becomes slower, its volume and

force being increased. If cardiac dilatation is present the area of cardiac dullness is diminished and the apex beat returns nearer its normal position. In order that the improvement may be permanent the baths and exercise to be described must be continued for several weeks.

This treatment will benefit cases of cardiac dilatation with loss of tone, functional and neurotic heart disease. In mitral stenosis where compensation is hardly broken it is often of service, but it should not be used in aortic disease, as attacks of syncope may result unless the compensation is broken and mitral diseases are appearing, when it may be beneficial. When compensation is entirely broken it is not as serviceable as rest in bed and other forms of treatment, and is contra-indicated in aneurysm, arterio-sclerosis and Bright's disease. The duration of a course of treatment is about four to five weeks, the effervescent bath commencing at the end of the second week.

The exercises which form a part of Schott's method of treatment are a series of simple movements of each limb made against a slight resistance afforded by an attendant; the object being to bring into action each muscle of the body. No movement is repeated and all are made slowly and systematically; a short period elapsing between each movement. They are stopped if the patient experiences the least distress or discomfort in respiration and are only resumed when the patient has rested. The assistant stands opposite the patient and by his hands makes gentle resistance to the movement as it is performed. The patient should breath regularly and deeply.

The following are the movements or exercises as given by the authorities at Nauheim:

1. The arms are extended in front of the body at the level of the shoulder, with the palms of the hands touching. The two arms are then moved slowly outward till they are in a line with each other; they are then brought back to their original position.

2. The arms being extended at the side of the body with the palms turned outwards, they are abducted and raised till the hands meet above the head; they are then brought back again in the same way.

3. Each arm in turn, extended by the side of the body with the palms turned forward, is flexed at the elbow till the fingers touch the shoulder, and is then extended again.

4. The arms being by the side with the palms of the hands turned inward they are rotated forwards and upwards at the shoulder-joint till they are vertically extended above the head, parallel to each other; they are then depressed in the same way.

5. The hands being clinched and turned outwards and the arms extended, each forearm is flexed till the fingers touch the shoulder; it is then extended.

6. The arm is rotated at the shoulder-joint forwards and upwards and then backwards and downwards till a complete revolution has been performed.

7. The arms being by the side and the palms turned inwards, they are moved upwards and backwards as far as possible, and are then brought back again.

8. The trunk is flexed on the hips, the knees being kept stiff, and is then extended again.

9. The trunk is rotated laterally, first to the right and then to the left.

10. The trunk is flexed laterally, first on one side and then on the other.

11. Each leg is flexed in turn at the hip-joint, the knee being bent.

12. The knee being kept straight, each leg in turn is raised as high as possible in front of the body, and then in the same way behind.

13. Each leg in turn is then abducted as far as possible, the knees being kept straight.

14. Each knee in turn is flexed, the patient standing on each leg alternately and supporting himself with a chair.

15. Finally, flexion and extension of the wrists and ankles may be practiced.

This treatment should not be adopted on the mere ground that heart disease is present. When compensation is full no treatment is demanded, and better results will be obtained from this mode of treatment in cases of neurotic individuals with imaginary heart disease, than where actual lesions are present. In percussing to ascertain how much the heart has diminished in size during the bath, allowance should be made for the deeper respirations taken, and as a result a greater portion of heart being covered by lung tissue.

CHAPTER V.

PERICARDITIS.

Pericarditis is an inflammation involving the whole or a part of the pericardium.

Varieties:—It may be acute or chronic; primary or secondary; circumscribed or diffuse; fibrinous or sero-fibrinous; hemorrhagic, purulent or tubercular; partially or totally adherent.

Etiology:—Among the predisposing causes are: climatic changes, and a lowering of the resisting power of the body, occupations and environment that render the system more susceptible to noxious influences. While it may be found at any age, it is a disease of adolescence and early manhood. There is no such thing as idiopathic pericarditis; all these cases are due to infection. Injuries that are followed by infection are fruitful causes; of the more direct causes are infectious constitutional disturbances, and extension of an acute disease; as scarlet fever, measles, whooping-cough, small-pox, influenza, enteric fever, tuberculosis, syphilis and gonorrhea.

In 20 per cent of the cases of rheumatism the pericardium is involved; the other diseases of this class that act as exciting causes are gout, diabetes, scorbutus and Bright's disease; it may result from extension of the inflammatory process of pleurisy, pleuro-pneumonia, endocarditis and myocarditis. Septic condition, and cancerous infiltration of surrounding structures have produced cases.

Pathology:—Whether the pericarditis be local or general the epicardium is more affected than the

pericardium. When local it is most marked at the base of the organ around the great blood vessels. The membrane early becomes of a dull color, with ruddy tints that at times show hemorrhagic points. A layer of fibrin is deposited over the surface involved, which may be smooth, but more frequently it is roughened, due to friction. In the serous form the fluid may measure a gallon; and be of a yellow, green or grayish color. The pericarditis accompanying Bright's disease has a marked tendency to form adhesions, the formation of pus and the presence of blood. Purulent pericarditis is usually the result of suppuration in surrounding tissue or from a pyemic process; the fluid is opaque, of a greenish yellow color and varies in quantity. In those cases where decomposition of the pus has taken place it assumes a putrid odor and has the characteristics of putrid suppuration in other parts. The most favorable termination of the sero-fibrinous variety is a reabsorption of the exudation. There is usually some thickening at spots of the epicardium which may be so pronounced at times as to simulate polypi. Usually there is more or less adhesion when the fluid is absorbed; the whole of the pericardial space may be obliterated. These adhesions may extend beyond the pericardium and involve the anterior chest wall, esophagus, aorta and surrounding structures. Fatty degeneration may take place in the new fibrous tissue and a deposit of organic salts, that leads to calcification, follow.

The inflammatory process may extend to the mediastinum and pleura, giving rise to mediastino pericarditis and pleurisy.

Symptoms:—The patient with acute pericarditis

chooses the recumbent posture; as the effusion becomes more pronounced he then seeks the semi-recumbent position, having the shoulders raised and inclined to the right side; a feeling of syncope is noticed when the erect position is assumed. The face has an expression of distress and anxiety. The local symptoms vary with the nature of the surface involved. Pain is felt in the pericardial region, which may extend to the shoulder and left arm. Palpitation and dyspnea in varying degrees of intensity may appear. The pulse rate is increased, may be 100 to 130, is strong and full in the plastic variety, but when larger effusions have taken place it then becomes feeble, rapid, irregular, intermittent, dicrotic and is not in proportion to the action of the heart. There is usually a rise of the temperature to 100° or 101°, and it may be higher, while in the sub-acute, also in children, there may be no particular rise of temperature, no dyspnea, but the pulse is increased in frequency. Children go around all the time of the disease and complain but little, but before the attack there is frequently nervous symptoms, night terrors and restlessness. When vomiting appears during the course of the disease it is unfavorable. Difficulty in swallowing may appear when the esophagus is involved from the posterior surface of the inflamed pericardium. These symptoms may vary according to the clinical stage of the disease.

Fibrinous Pericarditis:—At times this form presents no symptoms that would call attention to it; again they may be so marked that it is impossible to mistake them. The attack may be ushered in with a chill, which is followed by a fever; at

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times the chill may not be noted, and little if any fever is observed. Should the pericarditis appear as a complication of an acute disease there is an increase of temperature. Dysphagia is often noted as well as palpitation and breathlessness. Subjective symptoms of uneasiness and pain about the precordia are often noted. The location of this distress varies, at times it is in the precordia, again it is the epigastric region or the left shoulder, between the shoulders or down the left arm, and paroxysms of angina pectoris is not uncommon. The action of the diaphragm is restricted at times, due to pain. Many of the symptoms of pericarditis are recognized only upon physical examination, and in those diseases where pericarditis often appears as a complication daily examination of the heart should be made to note its first appearance.

Inspection does not reveal any change during the fibrinous stage apart from an increased force of the apex beat.

Palpation :— Early in the history of the attack there is an increase in the pulse rate. After a time when the myocardium is involved it becomes irregular, dicrotic and of low tension. The hand applied over the precordia in the early stage finds an increased apex beat which sooner or later becomes enfeebled. A friction rub is noticed which may be both systolic and diastolic, or only systolic.

Percussion :—At first no enlargement of the cardiac area can be noted; later, a slight enlargement may be observed.

Auscultation :—Shows a friction sound varying in intensity and quality. The murmur is increased by slight pressure with the stethoscope, while heavy

pressure may remove it entirely. The sound is heard over a limited area, its greatest intensity being when the patient is sitting up or leaning forward, and accompanies the cardiac movements, being present when the respiration is voluntarily restrained, eliminating pleurisy. It should be remembered that pericardial murmurs are occasionally heard with tuberculosis, cancer dryness, milk spots of the pericardium, ecchymosis of the sub-serous tissue and sclerosis of the coronary arteries. Fibrinous pericarditis may pass away in a few hours or it may be followed by a serous exudate and a pericarditis with effusion result.

Serous Pericarditis:—When the serous exudate takes place there develops some new symptoms. The temperature if it has been high is apt to drop. Nervous symptoms, as headache, lack of sleep and mild delirium is common. Should effusion be marked there is difficulty in swallowing, especially when the patient is in the recumbent posture. Should the fever be high, the face is flushed, but usually the face is pale and cyanosis of the upper portion of the body is present; at times this may be general; edema is present, which may be local or general. The urine is scanty, of high color, and of a high specific gravity. Frequently the breathing is interfered with and dyspnea is marked. If the effusion has appeared rapidly the respiration is markedly affected, if slowly there may be but little if any trouble. The speech may be interfered with in some cases, aphonia appearing as the effusion becomes more pronounced. The pulse is often irregular, of low tension, and there is distension of the veins of the neck.

Inspection shows a fullness of the precordia and bulging of the intercostal spaces in this region. The apparency of this symptom depends on the amount of adipose tissue present. The cardiac impulse becomes more diffused and less distinct.

Palpation:—The cardiac impulse becomes less as the effusion increases until it cannot be recognized.

Percussion:—As the effusion increases, the area of cardiac dullness increases and after an interval gradually disappears. The area is pear-shaped, the larger portion being downward.

Auscultation:—The heart gradually becomes fainter and the friction murmur disappears with the appearance of the effusion. The complete resolution of the fluid usually takes place, leaving some adhesion between the epicardium and pericardium.

Purulent Pericarditis—The symptoms of this variety depend upon whether it is primary, or the result of a secondary involvement. In some cases when it is a part of a general septic condition it may not be noticed. Again the rigor is marked, the temperature is high, the pulse is rapid, respiration quickened, and perspiration is profuse.

The physical signs vary and while any and all symptoms may be present at times, again they are absent. In those cases where a serous pericarditis has become purulent the symptoms are pronounced. The rigors are followed by the characteristic temperature, pulse, respiration, with the hectic flush, rapid wasting and marked prostration. The pulse becomes irregular, dicrotic, and the area of cardiac dullness is increased.

Hemorrhagic Pericarditis:—In a great proportion of the cases blood is found in the exudate, especially if they accompany renal or cardiac disease. It is common in those cases of pericarditis where cancer or tubercle is found, but in a less degree in the aged and alcoholics. It is constant in scorbutus, purpura and some of the eruptive fevers. The symptoms may not be pronounced, but when they are there is a vertigo with distress about the chest, cold perspiration, chilliness of the limbs, the pulse is empty and irregular, and syncope is common, ending at times in death.

Chronic Pericarditis:—This may result from an acute form in which resolution is not perfect, or it may be chronic from the beginning, in the aged, alcoholic, and those afflicted with kidney disease. When the result of an acute disease the symptoms are those of the stage in which the resolution ceased, and the chronic form began. When the disease is chronic from the start, pain is seldom complained of, but the circulation is weak, breathing is restricted, and there is a sensation of oppression about the precordia. The area of cardiac dullness is enlarged, the heart sounds are weakened, and frequently a friction murmur is detected.

Diagnosis:—In the majority of cases it is an easy matter to recognize pericarditis, but when latent or masked it is not. The friction sound might be mistaken for endocardial murmurs. But in pericarditis it is more superficial and limited to the precordial region. Gentle pressure with the stethoscope increases the friction sound while under more marked pressure it is obliterated. The sound is more marked with the patient sitting up or lean-

ing forward; while endocardial systolic sounds are of greater intensity while reclining. The pericardial friction sound rather follows the cardiac sound and is often to and fro.

Pleural friction sounds will disappear if the breath is held.

Tubercular pericarditis may be the result of a general miliary tuberculosis or of localized masses confined to the pericardium.

Hydropericardium might be mistaken for pericarditis but the condition of the kidneys and circulation should distinguish them.

Differential diagnosis of pericarditis with effusion and dilatation of the heart:

PERICARDITIS.	DILATATION OF THE HEART.
The outline of dullness is pear-shaped with the enlargement upwards.	The dullness is not pear-shaped and is largest downward.
Usually develops rapidly.	Usually develops slowly; at times rapidly.
If an impulse is present it is in the third or fourth left intercostal space.	When present it is lower than normal in the epigastrium, or to the left of the lower part of the sternum.
Apex beat may not be discernible, or up and outward.	Diffused.
Pain over the precordia, and tenderness over the epigastrium often present.	These are usually absent.
Usually attended with fever.	Fever is absent.
Occurs during acute rheumatism, Bright's disease, etc.	Occurs with anemia, degeneration of the myocardium, and chronic valvular diseases.

PERICARDITIS.	CARDIAC HYPERTROPHY.
Develops rapidly.	Develops slowly.
The pulse is weak, quick and may be irregular.	The pulse depends on the portion of the heart hypertrophied.
The impulse, when present, is in the third or fourth left intercostal space, and is feeble.	Impulse marked if the left ventricle is hypertrophied, the displacement is downward and outward, the indications are more in the epigastric region.

Prognosis :—This is more serious at the extremes of life than during mid-life; is not as dangerous in men as in women. Renal disease, alcoholism, exhaustion, the condition of the myocardium and valves, the nature of the underlying disease, all modify the prognosis, as well as the amount of the exudate, every extra ounce rendering the prognosis worse. When it accompanies rheumatism and is soon gotten rid of it is not so serious, but when it becomes purulent, or the hemorrhagic form appears, it is then grave.

Treatment :—The patient, suffering from pericarditis, should have absolute rest, both mental and physical, in bed. The diet should be composed of light, easily digested solids. Too much liquid is injurious as it over-fills the vessels, and increases the arterial tension; cold applications may be used during the first stage but many patients cannot endure cold, and in these cases hot applications will often bring more relief. If irritants have any place in the treatment it is late, when the chronic condition is present.

Aconite:—Is indicated when the advent of the pericardial inflammation is attended with fever, rest-

lessness, anxiety and precordial pain. It may be indicated at any time during the disease, especially if the result of rheumatism and the alterations are not resulting in paralytic or cyanotic symptoms. The pulse at first is hard and strong, becoming feeble and soft later. Veratrum vir. is the only remedy that might be mistaken for aconite. In aconite the nervous symptoms predominate, in veratrum it is the circulatory.

Bryonia alb.:—This remedy will be of service when pericarditis appears during pneumonia, rheumatism, or pleurisy. It is during the stage of plastic exudation that it is of service rather than that of effusion. The thirst, aggravation from motion, and sharp stitching pains are characteristic. The patient desires to lie perfectly still. The heart's action is rapid and violent. The pulse is tense, full, and may be intermittent.

Arsenicum alb.:—This remedy is indicated in the case of the cachetic individual. When such a remedy as veratrum vir. has been given and the pulse has speedily lost the characteristics of this remedy and a condition of marked debility has ensued. There are suffocative attacks, restlessness and anxiety; the surface of the body is cold, and is relieved by warmth, there is continuous thirst for a little water at a time. Anguish is marked and the patient is apprehensive of death. Upon physical examination there is found to be a marked effusion in the pericardium.

Digitalis purpurea:—This remedy is indicated in those cases where the pericardial involvement appears slowly and unobserved, there may be no local pain, but there is a rapidly appearing embarrass-

ment of the respiration. The heart's action is feeble. The friction sounds are of short duration and the effusion is pronounced. The pulse is not synchronous with the heart's action; it is feeble and often intermittent. There is excessive feeling of illness, great anxiety, but no marked, or continuous restlessness. Vomiting may appear at any time. Congestion of the liver and slight icterus is usually present. The face is livid and the lips blue.

Spigelia:—This remedy is adapted to rheumatic and sero-plastic pericarditis especially if the patient complains of severe local pains, which are stitching in character and appear at any time. There is marked palpitation of the heart so that the chest wall is raised by it. The pulse is irregular. Dyspnea is present and the patient can lie only on the right side with the shoulders raised. The least movement produces great suffocation, with anxiety and palpitation of the heart.

Cimicifuga:—This remedy should be thought of when the symptoms point to involvement of the myocardium. The cardiac impulse is pronounced and irregular and can be detected over a large area. Percussion gives an increased area of cardiac dullness. The pain radiates over the left side with the heart as a centre, and the character of the pain varies, at times it is aching, again it is stinging, or coming in shocks. There is a headache which is felt most in the top of the head, as if it would fly off; with pain in the eyeballs. The attacks appear suddenly and render the patient gloomy and despondent.

Colchicum:—Is indicated when pericarditis complicates rheumatism or Bright's disease; the heart's

action is weak, intermittent and quick, with throbbing of the blood vessels. There is thirst with coated tongue, vomiting and purging, dyspnea, and faintness is marked on the slightest movement. When colchicum does not meet the physician's expectation Colchicine (Merck) 2x often does.

Belladonna:—May be needed when the cerebral complications are marked. When its well known indications are present. The face is flushed, the pupils are dilated and there is violent palpitation of the heart. The pulse is full, hard and tense, the carotids show violent throbbing.

Veratrum viride:—If this remedy is called for it is at the onset. When the heart's action is violent, the pulse is hard, full and bounding. There is congestion of the lung, brain and cerebro-spinal system. The patient is plethoric, of large muscular development and of rigid fibre.

Kali iod:—During the stage of effusion with great dyspnea and excess of tough bronchial secretion. It is often of great service when absorption is not perfect. The iodide of ammonium should be studied at this period.

Cactus grand:—There is the sensation as if the heart was constricted by an iron band that prevents its normal movement. Pains are present that are worse on movement of the body; he cannot lie on the left side. The face is blue, there is great dyspnea, with irregular action of the heart, the pulse is quick, hard and tense.

Iodium:—When the acute symptoms have subsided, there is a distressing pain in the region of the heart which feels as if squeezed. A physical

examination shows that the exudate is not being absorbed.

Sulphur:—Should be thought of when the exudate is not clearing up and the case is at a stand-still.

Veratrum alb.:—Where there are symptoms of collapse. There is cardiac oppression, with dyspnea and cold sweat on the forehead.

Naja:—This remedy should be studied when, after the disease is past, the myocardium shows evidence of having been injured.

Paracentesis of the pericardium is demanded at times, not so much by the quantity of fluid present as by the rapidity with which effusion has taken place, and the danger resulting from compression and paralysis of the heart. When pleurisy complicates the pericarditis, tapping the pleural cavity may relieve the cardiac symptoms. In this procedure, as in all other surgical proceedings, absolute cleanliness is demanded. The instrument used should be sterilized. The chest wall should be washed with soap and water, shaven, then washed with alcohol and finally ether. The point selected is usually in the fifth intercostal space about two inches from the median line of the sternum. Any of the special instruments or an ordinary aspirating needle will answer the purpose. There is not much danger of wounding the heart if care is taken, as it is carried backward by the effusion until it is nearly all removed, and then it may come in contact with the needle. When the needle is withdrawn the puncture must be protected. A repetition of the operation may be necessary if the effusion accumulates again.

Purulent pericarditis demands a thorough opening and draining of the pericardium.

CHAPTER VI.

MEDIASTINO-PERICARDITIS.

Etiology:—This usually extends from the pericardium, but cases have been recorded where the primary lesion was in the lungs, pleura and mediastinal glands.

Pathology:—The pericardial lesion may be fibrinous, serous, purulent or hemorrhagic in character, with hypertrophy, dilatation and degeneration of the myocardium and various lesions of the lungs and pleura. A formation of bands bind the great vessels and base of the heart to the mediastinum, sternum, vertebral column and esophagus.

Symptoms:—A most careful physical examination and investigation of all the phenomena presented are necessary; dropsy, cyanosis and breathlessness, while present in many of these cases, are not of themselves sufficient to determine the character of the difficulty. The pulse usually presents the characteristic known as pulsus paradoxus. The veins of the neck become distended during expiration. Retraction of epigastrium; systolic retraction of the intercostal spaces; and a fixed position of the apex beat have all been noticed in cases of this kind.

Diagnosis:—This is not based on any one symptom but a combination of all the symptoms taken together.

Prognosis:—Adhesions about the base of the heart and great vessels in themselves are not serious and the prognosis must be based on the other conditions present.

Treatment:—This depends wholly on the symptoms presented. When pain is a marked symptom it may be relieved by heat.

ADHERENT PERICARDITIS.

The congenital absence of the pericardium spoken of by the older writers is now known to be due to pericardial adhesions.

Etiology:—While synechia may follow any form of pericarditis it is most frequently met with as a result of fibrinous pericarditis, and that accompanying renal disease. The adhesions may form before the effusion takes place, or follow its absorption. A feeble cardiac action favors their formation. They are very common in those forms of pericarditis that become chronic.

Pathology:—The degree of the adhesion varies from a complete synechia to the smallest possible band. The union is rendered possible by the fibrin that is deposited on the surface of the epicardium and pericardium during the inflammatory process. The adhesions are marked at the base of the heart. The newly formed tissue may undergo a fatty degeneration or calcareous infiltration. When the adhesions are loose and the valves normal, the heart is not hypertrophied, but when the adhesions are such as to bind the heart and the valves are defective, there is always complete dilatation, hypertrophy, and later a degeneration of the myocardium.

Symptoms:—In some cases there is nothing to indicate an adherent pericardium until it is revealed by a post mortem examination. Again, cyanosis, breathlessness, palpitation, edema and ascites point to this as the probable cause; attacks of syncope

may appear as a result late in life and angina pectoris is said to have been due to it. There is nothing about the pulse that is constant; it may be irregular, dicrotic, or the "pulsus paradoxicus" may be observed at times; there is to be seen a flattening on each side of the apex beat, retraction of the left portion of the epigastrium and a drawing in of the intercostal spaces surrounding the apex beat. Careful inspection shows a defective expansion of the left side of the chest during inspiration, also a distinct collapse of the cervical veins during the diastole of the heart.

Palpation reveals a diastolic rebound of the heart. The area of cardiac dullness depends on the presence or absence of dilation or hypertrophy of the heart. Should there be no hypertrophy, the heart's sounds may be somewhat weakened; when hypertrophy is present, they are accentuated.

Diagnosis:—This is based not on any one symptom, but on a combination of all; the pulsus paradoxicus, the collapse of the cervical veins during cardiac diastole, the retraction of the epigastrium and intercostal spaces during its systole, the fixed position of the apex beat and heart in general, and the diastolic rebound form a group of symptoms characteristic of this disease.

Prognosis:—Obliteration of the pericardial sac in itself is not serious, but when associated with valvular lesions there is a greater tendency to marked hypertrophy which soon leads to degeneration of the myocardium and heart failure.

Treatment:—In many cases nothing is complained of and but little treatment is demanded. Excessive physical exertion should be avoided. The

diet should be such as will cause as little gastric derangement as possible. It is during the period of resolution that the remedies can be used to the best advantage.

HEMOPERICARDIUM.

This may result from direct, or indirect violence, or from various diseased processes. Among the traumatic causes are punctured wounds and tears of the myocardium, the result of blows or falls. Of the pathological causes might be mentioned rupture of a diseased heart from violent exercise, rupture of the degenerate coronary artery from ulceration of the heart, and rupture of an aneurysm.

Pathology:—The amount of blood varies. In the cases where the development is rapid, the amount of blood is small and death is early; in those cases where development is slow the amount of blood is greater and death is delayed.

Symptoms:—At times the symptoms all appear suddenly, and death is rapid. Again it may appear slowly. Frequently the first symptom is that of a sharp precordial pain or of something giving way which is followed by giddiness or faintness, the giddiness being followed by convulsive seizure, the faintness by unconsciousness. A pallor is noticed with a cold perspiration. The pulse at once becomes feeble, irregular, and empty; usually the only local symptom is an increased area of dullness.

Diagnosis:—If any disease has been known to exist that might produce this condition, a diagnosis becomes much easier, otherwise its existence can only be determined with a degree of certainty by the sudden collapse and the enlarged cardiac area.

Prognosis:—Generally hopeless.

Treatment:—Usually little can be done at this stage. The patient should be given absolute rest. Aspiration while it does not give much permanent benefit may be resorted to. Remedies should be selected according to the indications present.

PNEUMOPERICARDIUM.

Gas within the pericardium is rare.

Etiology:—This may be due to fistulous opening, communicating with a viscera containing air. The discovery of the bacillus aerogenes capsulatus has explained the development of pneumopericardium in connection with traumatism.

Pathology:—With the gas there is present an exudation either purulent or hemorrhagic in character, indicating pericarditis.

Symptoms:—These cases are attended with severe rigors, a high temperature and a profuse perspiration. Sleeplessness and delirium are common, as well as cyanosis, edema, breathlessness, palpitation, syncope and pain in the cardiac region. The pulse is irregular and compressible, the cardiac impulse feeble, or absent.

Percussion gives a tympanitic note over the cardiac region, the location of which varies with the position of the patient.

Auscultation:—Splashing sounds are heard with the cardiac pulsations which are metallic in character. Pericardial friction sounds or endocardial murmurs may be heard, but they are partially lost in the loud splashing sounds.

Diagnosis:—This is usually easy. The tympa-

nitic percussion sound, varying with the position of the patient, and the combination of splashing and metallic sounds, are not met in any other disease to the same extent. The only condition for which it might be mistaken is gastric dilatation, but in this the upper portion of the pericardia is never tympanitic, and any sounds of a splashing nature disappear when the patient assumes the erect posture.

Prognosis: — This is the most serious of all affections involving the circulation. It is better in those of traumatic than in those of fistulous origin. In the former the wound may heal promptly and the air be absorbed. While in the latter there is usually a septic history to start with. These cases do not survive long; from a few hours to two or three days, when death is the result of cardiac failure, usually the result of a paralytic myocarditis.

Treatment: — When the result of a fistulous opening from some other infected part, the treatment is mainly palliative unless thorough drainage and disinfection of the cavity can be established. In cases due to traumatism, antiseptic treatment must be instituted, that infection may not take place. If pericarditis appears, it must be treated on the general principles for that disease.

HYDROPERICARDIUM.

Hydropericardium or pericardial dropsy is a serous transudation into the pericardial sac, being similar to hydrothorax and ascites.

Etiology:—Hydropericardium is a secondary affection, due to a venous stasis, the result of valvular disease; myocardial degeneration; or it may result

from disease of the lungs, pleura, kidneys, pericardium or mediastinum.

Pathology:—The fluid in the pericardial sac is clear, of a greenish or yellowish tint; if blood is present it is reddish, or if due to broken down coloring matter of the blood, it is a dirty brown color. The specific gravity is usually about 1015. Epithelial and round cells, granular in character, are found at times. The amount of fluid varies from one to four thousand C. C. At a post mortem examination the pericardium is found to be distended in proportion to the amount of fluid present. The serous surface is pale, smooth and shiny, showing no fibrinous exudate. If the fluid has accumulated slowly the pericardium is thickened, while at other times it is thinner than normal. The heart is generally pale and flabby, its right side being considerably dilated.

Symptoms:—It should be remembered that hydropericardium is but one phase of a great pathological condition and its symptoms are often overshadowed by the original disease. Its appearance is more frequently indicated by a sub-normal temperature than by a pyrexia. Attacks of syncope and dyspnea are common, while cyanosis and edema are present in a varying degree. If the effusion is marked the patient sits up, or leans forward, resting his elbows on his knees or on an object in front of him. The pulse is irregular, frequent, compressible and empty. The precordia may bulge and the intercostal space be distended. The veins of the neck are surcharged with blood. The cardiac impulse is faint if at all perceptible. The heart's sound and any murmur that may have been pres-

ent become faint. There is no friction sound. The liver is usually enlarged and ascites is present. The urine often contains albumen and is diminished in quantity. Edema of the lung or hydrothorax may be detected at the base of the lungs.

Diagnosis:—This is based upon the presence of an effusion without pericarditis and the presence of other diseases capable of producing it.

Prognosis: — This depends upon the cause. If this is amenable to treatment it is good, if not it is grave.

Treatment:— This is the treatment of the cause to a great extent. The use of dry foods, and the employment of those means that will eliminate the fluids from the body are beneficial. In cases where the symptoms appear to indicate it, paracentesis should be resorted to.

Apocynum cann: — This remedy has won for itself the chief place in the relief of dropsical conditions. Whether they be in the form of anasarca, ascites, edema of the extremities, hydrothorax, or hydropericardium, the result of a suspended action of the kidneys, no structural disease being present. There is a sinking feeling at the pit of the stomach with great thirst, but water disagrees, and is vomited up at once. The bowels are constipated, and the urine is scanty and of a dark color. The dyspnea is so great that the patient cannot lie down and can scarcely speak. The best results will be obtained from this remedy when it is used in doses of from one to five drops of the tincture, or one or two drachms of a decoction.

Arsenicum alb.: — This remedy should be thought of when there is rapid and great prostra-

tion, with sinking of the vital forces; marked anxiety and fear of death. The patient is sad and irritable, is much emaciated, and has a dry red tongue. There is great thirst; he drinks but little at one time, but he wants it often. The stomach feels distended and on fire. The nausea is accompanied with great weakness, anxiety, and recurs at regular intervals; is worse after midnight. Ascites, the result of disease of the heart, liver, spleen, kidneys and post-scarlatinal dropsy. There is great dyspnea with fear of suffocation; the patient is obliged to sit up. Great anguish is present. There are copious effusions in all the cavities.

Apis mellifica:—When this remedy is indicated the pains are of a burning and stinging character, and urine is scanty and of high color; the face is swollen, pale, waxen and edematous. There is loss of appetite, with but little, or no thirst. It produces anasarca and general dropsy, with scanty urine, and suffocation so that the patient cannot lie down.

Digitalis purp.:—This remedy has already been mentioned in several diseases; but it will be found of service here when there is an organic disease of the heart. In the earlier stages the breathing was only interfered with periodically; especially at night, while later it is continually bad, but still has paroxysms. The patient cannot lie down but sits with the head thrown back or inclined forward. The jugular veins are distended, the face is livid and dusky, the pulse is now frequent, irregular and feeble. The urine is scanty and highly colored, and the physical examination indicates organic heart disease.

Other remedies that might be studied with advantage in this connection are kali carb., kali iod.,

stigmata maidis, hellebore, lycopodium, mercurius and sulphur.

PERICARDIAL TUBERCULOSIS.

This may be primary or secondary.

Etiology:—It may be met with at any age but most frequently in those from twelve to thirty. It is more common in men than women. Primary tubercular pericarditis may result from an inherent weakness or, as in the case of young children, (nine months) the condition may have been present at birth.

When secondary it may result from disease of the mediastinal glands, pleura or lungs; and probably some of the so-called primary causes are due to infected glands, or from an acute general tuberculosis when the other serous membranes are involved.

Pathology:—The exudation may be fibrinous or serous. The tubercular nodules are small and scattered along the course of the cardiac vessels; at times the tubercles are without the sac while the exudation and bacilli are within the sac. There is a great tendency to hemorrhage in all these cases; and a superficial ulceration of the epicardium or pericardium may take place.

Symptoms:—Tubercular pericarditis may produce no symptom by which it may be recognized during life, but the general symptoms of tuberculosis may be present; the afternoon fever, night sweats, emaciation, weakness and the hectic symptoms. All the symptoms resemble pericarditis. There is a tendency for it to become chronic.

Diagnosis:—This is based on the presence of pericarditis and the general symptoms of tuber-

culosis. If tubercle is present in adjacent organs, or when it is possible to aspirate and demonstrate the presence of tubercle in the fluid, the diagnosis is easy.

Prognosis:—This is unfavorable. A proportion of the cases recover but it is small.

Treatment:—This must be carried along general lines. The tendency to tuberculosis must be removed, and the general strength and nutrition maintained. Should the exudation be in such quantities as to interfere with the heart it must be removed.

PERICARDIAL SYPHILIS.

Pericardial syphilis is rare. It appears as a secondary or tertiary manifestation. Gumma seldom appears; its more common appearance being a formation of fibrous tissue, and the formation of adhesions between the pericardium and epicardium.

Symptoms:—It has seldom been recognized during life.

Diagnosis:—This depends upon the presence of pericarditis and the existence of syphilis in the system.

Prognosis:—This is not so good as that of constitutional syphilis without the pericardium being involved.

Treatment:—This requires the same general treatment and the use of such remedies as control syphilis in general.

NEOPLASMS.

Neoplasms of the pericardium are rare as a primary lesion; when secondary they are more com-

mon when they may be found in connection with disease of the mediastinal glands, pleura, lungs or esophagus.

Pathology:—New formations present the same structural peculiarities here as elsewhere; fluid in the pericardial sac may be serous, hemorrhagic or purulent. If the new growths press on the veins the exudation may be marked.

Symptoms:—The detection and classification of these growths is impossible during life, but the general symptoms of pericarditis and the appearance of a malignant cachexia often lead us to believe that some malignant condition is present.

Diagnosis:—The existence of new formations in other parts of the body, and the malignant cachexia are taken as evidence that new formations give rise to the symptoms.

Prognosis:—Unfavorable.

Treatment:—Meet the symptoms as they arise.

ACTINOMYCOSIS AND HYDATID CYSTS.

Actinomycosis and hydatid cysts are among the rare affections of the pericardium.

CHAPTER VII.

MYOCARDITIS.

This is an inflammation involving the muscular structure of the heart, it may be acute or chronic.

ACUTE.

Acute myocarditis is most frequently found associated with endocarditis or pericarditis. The rheumatic form of myocarditis may exist apart from either endo- or pericarditis, and it may be met with during an acute infectious fever or from an infectious embolism.

Pathology:—This varies according as the parenchyma or interstitial tissue is first involved; and whether the disturbance is general or localized.

In the acute parenchymatous variety there is a granular degeneration of the muscular fibres of the parenchyma, with a numerical increase of their nuclei. The muscular structure is soft, turbid, and looks pale. In the diffused interstitial variety, the primary changes are in the connective tissue and consists of an infiltration of round cells.

In the localized variety, the changes result in the formation of an abscess or abscesses, which in time discharge into the pericardium or into one of the cardiac chambers. When the discharge is into the blood current, the infection is carried to various parts of the body and the embolism establishes an abscess. The parts weakened by the abscess may give rise to rupture of the heart or an aneurysmal dilatation.

Symptoms:—These are not positive. The pulse

is irregular, small, rapid aud compressible. There are repeated attacks of cardiac palpitation, enfeeblement and syncope. Later, venous stasis appears. When a patient suffering with rheumatism, septicemia or disease that may produce this affection, produces this group of symptoms, myocarditis should be thought of.

Physical Signs:—During the early stages there may be no physical evidence to indicate any such trouble. When they appear they are such as indicate a progressive chronic dilatation. There is an increased area of dullness with displacement of the apex beat downward and outward, with weakening of the first sound; on account of the diseased condition of the myocardium the valves do not perform their work perfectly and as a result murmurs appear. A circumscribed increase of cardiac dullness with pulsation in a particular direction (upward and toward the left), should make one think of cardiac aneurysm; an embolic process with cardiac murmur and a septic type of fever should lead to a careful investigation for circumscribed myocarditis.

Diagnosis: — The myocardium is involved in every case of rheumatic endocarditis or pericarditis. Typhoid fever and variola at times give rise to myocarditis without the endocardium being involved. It is impossible to make a positive diagnosis of myocarditis in the majority of cases; but when a cardiac weakness appears with greater rapidity than in acute degeneration, and less so than in rupture, myocarditis is to be expected.

Prognosis:—This depends on the extent to which the myocardium is injured by the inflammation, as muscular fibres that have been replaced by fibrous

tissue leave the heart wall weakened, rendering it liable to rupture during severe exertions. Of the various forms, the diffused is most fatal, recovery may take place from the circumscribed variety that accompanies rheumatism.

Treatment:—When myocarditis appears as the result of some other disease, the treatment of the original disease must be the guide. In all cases absolute rest must be insisted upon and nutrition maintained.

Stimulants:—Aromatic spirits of ammonia, ten to fifteen drops every hour, in glycerine, assists many of these cases by preventing the blood from remaining in the heart. Alcohol should not be used in this class of cases or quinine, as they are both vasomotor paralyzers. The heart tonics have no place in the treatment of myocarditis. This disease must be treated symptomatically and those remedies that are known to have a disorganizing action must be studied.

Aconite will be found serviceable when heart failure is impending.

Arsenicum album:—This remedy should be studied when there is great prostration with rapid sinking of all the vital forces, with mental anguish which increases as the suffering increases, and is attended with restlessness and fear of death. The restlessness is marked, but the patient is physically too weak to move. He believes that he is going to die, that his disease is incurable and it is useless to take medicine. The pains are burning in character; the affected parts burn like fire; and relief comes from heat, hot applications and hot drinks. There is great thirst for cold water, of which he

drinks often, but little at a time; after eating or drinking there is diarrhea, the stool being dark, offensive, and followed by great prostration. There is rapid emaciation, with cold sweats, pale skin and great exhaustion, which the patient notices most when he attempts to move. The patient is worse from 1 to 2 p. m. and 12 to 2 a. m.

Muriatic acid:— This remedy is most frequently indicated in those patients that have dark complexion, hair and eyes; are peevish, irritable and disposed to anger and chagrin. There is great prostration so that the patient slides down in bed; the lower jaw drops and the eyes close the minute he sits or lies down. There is ulceration about the mouth and anus, the tongue and sphincter ani being paralyzed. There is involuntary stool and urination, and he cannot urinate without the bowels moving. The patient is in a deep, stupid sleep; is unconscious while awake; the tongue is coated at the edges, and is shrunken, dry and leather like. The pulse intermits every third beat.

Lachesis:— With this remedy there is great physical and mental exhaustion with trembling in the whole body. There is a hemorrhagic diathesis, so that small wounds bleed easily and profusely, the blood being dark and non-coagulable. The patient is in a stupor, the countenance is sunken, the lower jaw drops, the tongue is black, dry and trembles so that it catches the teeth when being protruded. The conjunctiva is yellow, or orange color. The perspiration is cold and stains the clothing yellow. There is great hyperesthesia of the skin, especially about the neck and waist, and

all symptoms are worse from sleep and on the left side. It is best adapted to thin individuals.

Crotalus horr:—There is great prostration of the vital forces; there is a bloody sweat, the blood flowing from all the orifices of the body. The patient is suffering from a low state of the system; the vital forces are exhausted. The tongue is fiery red as if polished. The skin is cold and dry; the expectoration is black blood.

Phosphorus:—This remedy is demanded at times by those who are tall and slender, with a fair skin, delicate eyelashes; and in young people who have grown too rapidly and are over-sensitive to all external impressions. There is hemorrhagic diathesis with a weak, gone sensation in the entire abdomen. As soon as water becomes warm it is vomited. If constipation be present, the stool is long, dry and hard; if there be diarrhea, it is profuse, pouring away from the patient as from a hydrant. The patient is worse before midnight and while lying on the left side.

CHRONIC MYOCARDITIS OR FIBROUS CHANGES OF THE HEART WALL.

This is a chronic inflammation of the myocardium, in which there is either a hyperplasia of the connective tissue or a substitution of fibrous for muscular tissue.

Etiology:—This is a disease of advanced life in which more males than females are affected, and a hereditary tendency prevails in certain families. The principal causes are alcohol, tobacco, syphilis, malaria, diabetes, rheumatism, gout, chronic neph-

ritis, lead poisoning, lithemia, adherent pericardium, chronic vascular changes and valvular diseases; or it may be an extension of the inflammatory process from a chronic peri- or endocarditis.

Pathology:—This is as varied as the causes. The structural changes during adult life are found in the wall of the left ventricle, the septum and the papillary muscles. The wall of the right ventricle is the one involved during fetal life. There is an increase in the size and weight of the organ and it shows both dilatation and hypertrophy. The portion of the heart wall affected is paler and thinner than the healthy part, and is harder to the feel. The lumen of the coronary arteries, especially the left, is contracted, either by endarteritis or atheroma, obliterating its orifice. Frequently the whole arterial tree shows sclerosis, with a general increase of the fibrous tissue throughout the body, and cirrhosis of the kidney. The microscope shows a degeneration of the muscular fibres with an increase of the fibrous tissue. Muscular cells are seen in different degrees of disintegration, from granular to fatty cells and fibrous tissue replacing the muscular. When the lumen of a sclerosed vessel is occluded by a thrombosis, the part supplied by the artery loses its normal color and becomes soft, of a pale brown or yellow color, the striæ disappear and the muscular fibres have a hyaline appearance.

Symptoms:—The symptoms vary according to the etiology. Many patients complain of palpitation, fluttering of the heart, throbbing of the arteries, attacks of breathlessness which are accompanied by giddiness and faintness. Pain is com-

plained of, which varies from a mere sense of disturbance to the most agonizing attack of angina pectoris. The temporal artery may be tortuous and the arteries in general hard to the feel, with indications of degeneration. In the early stage the pulse may be of high tension, regular and full. When cardiac failure appears, the tension is low, the vessel empty, and the rythm irregular. The apex beat is displaced downward and to the left.

Percussion:—Shows the area of cardiac dullness increased.

Auscultation:—Shows the second aortic sound increased and doubled, while the first mitral sound is of a lower pitch than normal and may be replaced by a murmur. Cheyne-Stokes respiration is a frequent symptom whenever the patient sleeps, as is dyspnea from exertion. The urine is diminished in quantity, is of high specific gravity, and in many cases contains albumen. Cerebral derangement in the form of sleeplessness, loss of memory, and anxiety often appears. This disease may be slow in its course, or may terminate life suddenly.

Diagnosis:—This is not an easy matter. The similarity of fatty degeneration and chronic myocarditis renders it difficult to differentiate them. The symptoms of arterial degeneration; the vigorous cardiac impulse; the accentuated, second aortic sound and cardiac pain; all point to a degeneration of the myocardium rather than a fatty degeneration.

Prognosis.—The history of the case, whether of slow or of rapid development; the condition of the cardiac impulse, and the first sound are important;

as well as the effect of muscular exertions, such as walking up stairs; denote the condition of the myocardium; attacks of syncope and angina pectoris in connection with degeneration of the myocardium are unfavorable omens.

Treatment.—All the habits of the patient must be carefully studied and regulated. Massage will be of benefit. The Nauheim baths are of great service. The etiology should be studied carefully and any dyscrasia that may be present in the system, corrected. If the dyscrasia is due to syphilis, the mercurials or iodides will be found of service, as indicated; also, gold in some form, or the chloride of gold and sodium. When the degeneration is a family characteristic, the iodide of arsenic will be of benefit. The so called heart tonics are usually injurious to such a heart; at times, the strychnia arsen., strychnia phos., caffeine and digitalis are indicated. The more the heart is rested and nourished, the better. Where there is an inherited tendency to such changes, the deeper acting remedies as sulphur, psorinum, syphilinum should be studied. There should be a degree of exercise; but the heart should be given all the rest possible. The diet should be highly nutritious at all times, and easily digested.

CHAPTER VIII.

ACUTE CARDIAC DILATATION.

This is an acute dilatation of one or more of the cavities of the heart.

Etiology:—It is produced by a sudden increase of the intra-cardiac blood pressure, which may result from a severe muscular effort; as mountain climbing, heavy lifting, athletic feats and bicycling in those who have not been training for such tasks. Depressing mental emotions are frequent causes. Predisposing causes may be at work in the form of myocardial degenerations. In those suffering from diphtheria and typhoid fever, dilatation and death, at times, follow the assuming of the erect or sitting posture; this has also been observed during pneumonia. A rupture of an aortic cusp may produce similar symptoms.

Pathology:—The wall of the part affected is thinned and the cavity is partially filled with coagulated blood. The obstruction is most frequently in the pulmonary circulation, and the right side of the heart being thin is most frequently dilated; when the systemic arteries are at fault, the left side of the heart dilates.

Symptoms:—There is a history of some sudden or violent action that the patient is not adapted to. The onset is rapid, the heart's action is quickened; the respirations are accelerated at first, then breathlessness follows; the individual becomes dizzy and nauseated; the pulse is small; the skin becomes a gray ashen color; the lips are purple; the vision becomes clouded; the mind fails;

and the man falls. If dilatation has not been marked, the individual may recover after a few days; if more pronounced, he may die; or if recovery takes place, it is slow, requiring months and years to regain a normal condition.

Physical Signs:—The cardiac impulse is weak and fluttering. The area of cardiac dullness is increased to the right or left of the sternum, according as the right or left side of the heart is involved. The heart sounds are rapid and indistinct.

Diagnosis:—There is usually a history of prolonged or extreme physical exertion, with the appearance of circulatory disturbance. The great dyspnea, the heart's irregular action, and mental disturbance are prominent symptoms; together with those observed during physical examination. The area of cardiac dullness is usually more marked, especially to the right. Should the trouble be due to the rupture of an aortic cusp, a diastolic murmur is heard; at times it is necessary to wait some time, until the heart has had rest, before stating how extensive the dilatation is.

Prognosis:—At times, death follows the dilatation at once; in other cases, a compensatory hypertrophy is established and life is prolonged; but if this hypertrophy is not established, death comes later. In these cases the effect of rest must be studied and the prognosis based upon it.

Treatment:—The first requirement is absolute rest. This should be in bed and free from all forms of annoyance. Cold applications over the precordia often brings a degree of relief to the

patient. The cause if still active, should be removed. The diet should be nutritious but as dry as possible. Four or five medium sized meals being preferable to three large ones.

Arnica mont.:—This remedy is frequently indicated after injuries, strain and in the over-exertion of athletes. There are bruised pains in the chest with a sense of compression and palpitation. Painful pricking in the heart, fainting fits, and cough with expectoration of blood.

Laurocerasus:—Whenever a little exercise produces cyanosis with gasping for breath, this remedy should be studied. There are spasmodic contractions of the throat and chest with great dyspnea, slow irregular pulse with fluttering in the region of the heart, and gasping for breath, with cough.

Convallaria:—This remedy has proven itself serviceable in certain cases of dilatation of the right side of the heart, not during the very acute stage but later in the case.

Ignatia:—When the dilatation is the result of depressing mental emotion and grief, this remedy is indicated.

Arsenicum alb.:—This remedy will benefit those cases that result from mountain climbing.

After the acute symptoms subside, any of the cardiac remedies may be indicated.

CHRONIC DILATATION OF THE HEART.

This is an enlargement of one or more of the cavities of the heart.

Etiology:—Of the predisposing causes, heredity is the most fruitful. Not only is there a tendency

in certain families to degeneration of the cardiac muscle, but also, to those diseases that favor its development and terminate in dilatation. On account of their work and modes of life, it is found more frequently in males than females. Toxic conditions whether from a necrotic origin or the result of renal disease, is attended with dilatation, as are anemic and cachetic states, the result of improper food and bad hygienic surroundings. Degeneration of the myocardium and coronary arteries, and an adherent pericardium form a group of predisposing symptoms connected with the heart itself. Of the exciting causes, is an extra amount of blood within the heart and as a result, an increase of the intra cardiac blood pressure with a diminution of the resisting power of the heart. Of the more chronic conditions that give rise to dilatation, are chronic valvular diseases. Emphysema and other pulmonary diseases produce dilatation of the right side of the heart; while diseases involving the systemic arteries produce dilatation of the left side.

Pathology:—Dilatation may be general or partial. If one cavity suffers much, the whole organ will be dilated to a certain degree.

In simple dilatation the weight of the heart is not materially increased. If the dilatation be general, the heart will be rounded in shape and its breadth increased. When the right ventricle alone is dilated the breadth of the heart is increased; if the left ventricle too is affected, the heart is also lengthened. The auricles are more frequently dilated than the ventricles, and the right ventricle more than the left. In case of aortic stenosis

there is little dilatation, but marked hypertrophy of the left ventricle; while in incompetency of this orifice there is great dilatation with marked hypertrophy. In stenosis of the mitral orifice there is marked hypertrophy of the left auricle with but little dilatation, while in incompetency there is great dilatation.

Following disease of the mitral valve and lungs, the right ventricle is affected.

The auriculo-ventricular orifice may dilate as the result of the dilatation of the cardiac cavities and render the cusps incompetent. When dilatation becomes pronounced, the trabeculæ are stretched and cord-like. A regurgitant murmur indicates that hypertrophy is no longer capable of rendering perfect compensation, as the papillary attachment of the chordæ tendinea is displaced from the centre of the ventricle, and the perfect closure of the auriculo-ventricular orifice is prevented.

Symptoms:—The symptoms of chronic dilatation appear slowly. There is a gradual loss of strength, and a feeling of faintness is complained of on any exertion of importance. Frequently the gastric function is deranged to such an extent that the patient complains of nothing else. The area of hepatic dullness is increased and jaundice may be present. Ascites is present in the majority of cases to a varying degree. As compensation begins to fail, cardiac palpitation appears with a feeling of uneasiness or pain in the cardiac region; the cardiac rythm is irregular. The pulse is rapid but weak, and the arterial tension is low; at times the radial pulse will appear slow, but upon examination it will be found that there is an absence

of every other beat. Dyspnea appears gradually and is preceded by fine moist rales in the lower portion of the lung; most marked in the left, and soon the patient is obliged to sit up all the time. When there is dilatation of the right heart, the patient frequently complains of a distress in the epigastric region when bending forward.

Physical Signs:—Inspection shows the apex beat so diffused that it is impossible to locate it. When the right ventricle is dilated the cardiac impulse is prominent in the epigastric region; the jugular veins may be varicosed and pulsating.

Palpation.—This reveals a heaving, diffused cardiac impulse; and the apex beat is carried to the left and diffused. The apex beat is carried to the left in simple dilatation, and to the left downward if hypertrophy be present.

Percussion:—Outlines an enlarged area of cardiac dullness. If the right ventricle is most involved, the dullness may extend to the right nipple. When the left side is affected, it may extend to the left axillary line. When the auricles are involved the dullness may extend to the first rib.

Auscultation:—Reveals the heart's sounds to be feeble and indistinct. The first sound is weak, muffled, and may not be heard. The second is more pronounced except at the apex. A systolic murmur may be present if there is marked dilatation.

The impaired percussion sound, the roughened respiratory murmur, and moist rales of the lungs, indicate a passive hyperemia. There may be

edema of the lungs or an effusion into the pleural sac. The urine is lessened in quantity, the solids are increased, and albumen and blood may be present.

Diagnosis:—This is based on the increased area of cardiac dullness, the weak, irregular heart action and diffused indistinct apex beat; the feeble first sound; the dyspnea; cyanosis; edema and the distended condition of the veins.

DIFFERENTIAL DIAGNOSIS.

DILATATION OF THE HEART.	CARDIAC HYPERTROPHY.
Pulse.	
Small, vigorless, irregular and intermittent.	Full, sustained and regular.
Area of Cardiac Dullness.	
Increased upward and outward.	Increased outward and downward.
Cardiac Sound.	
Brief, sharp, feeble first sound, second is enfeebled.	Prolonged, dull first, and accentuated second sound.
Heart Action.	
Weak and irregular, with an extended, wavy impulse.	Slow but heavy impulse.
Apex Beat.	
Diffused and weak.	Strong.

Prognosis:—This is unfavorable; while the disease may be stayed for a time, sooner or later it becomes progressive. The nutrition of the patient modifies the prognosis, as the condition of the heart is dependent upon it. The primary cause of the dilatation must always be taken into consideration. So long as the heart's action is regular under

normal conditions the immediate prognosis is not bad; but when it becomes irregular at all times, with indications of venous congestion as indicated by dyspnea, anasarca, gastric and renal disturbance; the prognosis is bad and the chances are that the patient will not survive a year.

Treatment:—The treatment of chronic dilatation of the heart embraces all those measures that are employed for the relief of a failing heart; and the diseases that cause it. Each case must be studied in its totality and treated accordingly, as no routine treatment will benefit. These cases demand a prolonged absolute rest in bed; it will be found that the annoying symptoms, as dyspnea, cough, cyanosis and dropsy, disappear quicker when this is insisted upon. The nutrition must be maintained and as a result, a proper diet is of importance. This should be nourishing and easily assimilated. Liquors should form no part of the diet; if any is allowed, it should be light dry wine; whiskey and brandy are injurious. An intelligent use of exercise benefits the majority of these cases; the idea being to establish an equilibrium so far as is possible, between the dynamic power of the heart and the resistance against which it labors. To this end massage, walking and mountain climbing have been employed; of late the method mostly employed has been Schott's, which consists in resistance exercise and medicated baths.

Digitalis:—When this remedy is indicated the heart's action is weak, the contractions lack vigor; as a result, the arteries are empty and the veins distended. The pulse is weak, intermittent and irregular. There is oppressed breathing with a

feeling of anxiety in the cardiac region, the patient cannot fill his lungs and desires more air; he complains of a sinking and weak feeling in the epigastric region. The least movement produces violent palpitation and there is a sensation as if the heart would stop beating if he moved, with fear of impending death.

Convallaria: — This remedy is indicated when there is valvular disease, either stenosis or insufficiency; the ventricles are suffering as a result and dilatation is taking place; compensation is failing, there is venous congestions and a deficiency of arterial blood. The least exertion produces palpitation of the heart. The mental condition is one of great irritability.

Strophanthus hisp.:—This remedy is indicated when the heart's action is rapid and feeble; as the pulse becomes stronger there is relief of the dyspnea. It should be studied when digitalis disturbs the digestive organs or does not yield favorable results.

Crataegus oxyacantha:—This remedy in five-drop doses of the tincture will often bring excellent results.

Calcarea hypophos.: — When the general nutrition is below the normal, especially in the young, this remedy, in connection with a nourishing diet, has often given good results. There is depression of spirits with an emaciated, pale face: appetite and digestion is poor. Inspection may show a chicken breast or spinal curvature with anemia. The blood vessels of the hands and feet are distended and the extremities are habitually cold.

Sparteine sulph. 1x.:—This remedy is indicated in patients who are nervous and hysterical, with great muscular weakness. The heart's action is weak and feeble. The pulse is weak and small. There is more or less dropsy present that is removed under the influence of this remedy.

Agaricine 1x.:—In those patients who have been addicted to the excessive use of tea, coffee or tobacco, or are recovering from some debilitating disease that has greatly weakened the heart; the pulse is weak and irregular, while the heart's action is weak and attended at times by violent palpitations. There is profuse sweating with twitching of the muscles and dilatation of the heart.

CHAPTER IX.

CARDIAC HYPERTROPHY.

Definition:—This is an enlargement of the heart due to an increase in the volume of the muscular fibres.

It exists under two different forms, in one there is a simple hypertrophy without any change in the size of the cavities of the heart; while in the second there is a dilatation of these cavities.

Etiology:—It is a conservative process established as a result of interference with, or defect in the vascular system. Among the causes are interference with the circulation of the blood through the small arteries, due to certain toxic agents; as the result of Bright's disease, syphilis, gout or lead poisoning; obliteration, narrowing or inelasticity of the walls of the blood vessels, as found in the aged; general arterial sclerosis, hydremic plethora and narrowing of the aorta, whether from congenital or other causes; emphysema and pleuritic effusion are the principal pulmonary causes. Any defect in the circulation of the blood in the heart that demands an extra effort on the part of the heart muscle, is sure to be attended by more or less hypertrophy. The form known as "primary idiopathic" is dependent on prolonged physical exertion. Neuroses, tea, coffee and alcohol are all responsible for a percentage of these cases.

Pathology:—The hypertrophy may be general or partial. While any part of the heart may be hypertrophied, the left ventricle is more frequently involved than the right, and the right auricle more

frequently than the left, this being in proportion to their physiological importance. The shape of the hypertrophied organ is dependent on the part or parts involved. Whenever dilatation is associated with the hypertrophy the organ is greatly enlarged. The papillary muscle, the columnæ carnæ and the muscular trabeculæ are all greatly thickened, the latter especially in the right side of the heart. The muscular tissue is a deeper red and firmer; as the heart enlarges it sinks lower in the chest owing to increased weight and size. The hypertrophy is due to an increase in the muscular fibres.

Symptoms:—So long as the compensation is perfect there are no symptoms; but the patient early recognizes that the fine adjustments between the circulation and the condition imposed on it are easily disturbed from slight emotion or exercise. The pulse is full, strong and of high tension. A dry, irritating cough is often complained of. The pronounced cerebral circulation may give rise to headache, tinnitus aurium, carotid pulsation, flashes of light before the eyes and flushed face.

The physical signs vary according to the part of the heart involved.

Inspection: Shows the force of the apex beat to be increased, lower than normal and to the left; and cardiac area to be enlarged. When the right side is more involved there is epigastric pulsation and the apex beat, while to the left, is not lowered to the same extent as is found when the left side is involved.

Palpation:—This confirms inspection and there is bulging of the precordial region and the pulse is full and forcible.

Percussion:—Shows the area of cardiac dullness to be increased both vertically and transversely.

Auscultation:—Is not reliable, as the heart sounds are modified more by the condition of the myocardium than by the hypertrophy. If the hypertrophy is well advanced and the heart muscle is in a normal condition the first sound will be dull, prolonged and booming. Should the myocardium be below par, the first sound may be hardly noticeable, and the intensity of the second sound depends on the arterial tension.

Diagnosis:—The Cardinal points in the diagnosis are the displacement of the apex beat to the left, the heaving, forcible impulse, and the increased area of cardiac dullness. This last symptom must not be confounded with pericardial effusions, aneurysm, mediastinal growths, displacement of the heart, left-side pleurisy, phthisis and cirrhosis of the lungs. Cardiac hypertrophy, unlike tumor formation, is a perfect reproduction of the original tissue, having the same function, and it occurs only when the muscle is healthy and properly nourished. The hypertrophy is not in itself dangerous, the danger being in the subsequent dilatation which is slowly brought about, owing to changes in the coronary arteries or a general malnutrition.

Prognosis:—Several questions must be carefully considered before the prognosis is stated: 1st, are the nutritive possibilities such as will allow a sufficient hypertrophy to compensate for the original lesion? 2d, Does the nature of the primary lesion permit a sufficient hypertrophy to compensate? If the cause is removable and the hypertrophy full, the prognosis is good. If the cause is one that

cannot be removed the prognosis is good so long as compensation is full. But if the cause is progressive there will come a time when the compensation will not be sufficient and the prognosis is then unfavorable.

Treatment:—The treatment of cardiac hypertrophy resolves itself into the maintenance of a necessary hypertrophy. If the cause of hypertrophy is amenable to treatment it should be removed. Such cases are usually due to over-exertion or have nervous or toxic origin. Hygiene and dietetics are especially useful in this class of cases. All the functions of the body should be kept in as perfect a condition as possible. The diet should be carefully regulated as to quantity and quality, as over-eating is especially injurious; and the less liquid taken the better, so long as the normal physiological conditions are met. If the patient is in the habit of using tea, coffee or liquor, their action on the heart should be studied carefully, and if they are found to be injurious they should be dropped from the bill of fare. The patient should avoid being fatigued. Gentle exercise is the best method of keeping up the normal muscular tone and vigor. Violent exercise should not be allowed under any circumstances. The cutaneous circulation should be stimulated either by the flesh-brush or by the cold sponge bath, followed by thorough friction. The mental condition of the patient should be as cheerful as possible; he should have plenty of sleep and have but a light meal before retiring. Woolen clothing should be worn uext to the skin the year round. If, in spite of the regulation of the patient's habits there are decided symptoms pointing to a gradual loss of com-

pensation, absolute rest in bed must be insisted upon, that the work of the heart may be diminished and allowed to regain its disturbed compensation. To this class of patients, when there is ground for it, a favorable opinion, confidently expressed, is often of benefit.

Aconite is indicated when there is palpitation with marked anxiety and restlessness, in robust, strong, full blooded individuals. There is glistening of the eyes and injection of the conjunctiva.

Adonis vernalis has recently assisted in establishing a compensatory hypertrophy in two cases, one of aortic stenosis and the other of mitral regurgitation. The symptoms were edema of the lower extremities, great dyspnea, scanty urine and irregular pulse.

Arsenicum alb. is of service when the muscular structure of the heart is involved. There is palpitation of the heart and general anasarca; the pulse is small and irregular. The characteristic restlessness, anxiety, prostration, thirst and nightly aggravations are present. This remedy has also been of service in those cases that develop as the result of mountain climbing.

Arnica montana has not been of much service in hypertrophy of the heart, but in cases where the heart has been put upon a strain that it had not been prepared for, such as violent running, bicycling, etc., it is of service. There is distress in the cardiac region, with a slow pulse while at rest, which becomes rapid on motion.

Convallaria majalis is indicated when the right side of the heart is involved, as the result of ob-

struction to the pulmonary circulation. The heart's action is weak; there is great dyspnea with faintness and palpitation of the heart.

Cactus grandiflora has been so frequently verified that it needs only to be mentioned. There is hypertrophy with dilatation, the patient is pulseless and extremely exhausted, cannot lie down, has sensation of constriction about the heart, as if an iron prevented its normal movement; acute pains and painful stitches in the heart with obstruction to the respiration.

Collinsonia Canadensis was found useful in one case where the heart was greatly hypertrophied and there was palpitation and pain. This remedy controlled the difficulty, the guiding symptom being the hemorrhoids and constipation.

Cratægus is a remedy I have used several times with success, especially where there was a failure of the normal action of the heart; but I am unable to define its action with certainty.

Digitalis is a valuable but much abused remedy. Its characteristic, to my mind, is an extremely slow pulse becoming accelerated and irregular on the patient assuming a sitting posture or on the least movement. There is edema about the ankles, dyspnea and cyanosis. He feels that the heart would stop if he moved.

Iodide of arsenic has been of great service in maintaining compensation in the aged. There is palpitation of the heart with hypertrophy, and tightness across the chest. An examination of the arteries shows that you are dealing with an arterial as well as a cardiac degeneration.

In kalmia latifolia there are paraoxysms of pain about the heart with dyspnea and febrile excitement; there is endocarditis with wandering rheumatic pains in the region of the heart, extending down the left arm, and palpitation which is worse while the patient is lying on the left side, but relieved by lying on the back.

Lycopus Virginicus has been of service in several cases of failing compensatory hypertrophy. One case especially was that of a man seventy years old who was addicted to the use of tobacco and had used a great deal of alcohol. There was an endocardial murmur, and rapid dilatation of the heart was taking place. A cough with hemoptysis was present, and the heart's action was quick, irregular and feeble.

Naja tripudians has rendered valuable service when there was present an annoying sympathetic cough with exaggerated heart action. The heart is increased in size and there are organic changes of the valves. There is dyspnea and prostration with marked pain about the heart and general anasarca.

Sparteine sulphate has been of special service in hysterical subjects with a neurotic history, when the heart muscle appears to be undergoing degeneration and compensation is failing.

Veratrum viride has many of the symptoms of aconite, but here there is less disturbance of the nervous system and more of the arterial; as indicated by the more forcible action of the heart, the strong pulse, and greater congestion of the head and chest.

CHAPTER X.

FATTY HEART.

Definition:—Fatty heart is a term used to designate two widely different pathological conditions. In one there is an excess of fat on the surface and between the muscular fibres of the heart and it is known as fatty accumulation with infiltration; in the other, fat has taken the place of the muscular fibres and it is known as fatty degeneration.

FATTY ACCUMULATION WITH INFILTRATION.

Etiology:—This is dependent upon those causes that give rise to obesity, and is seldom met with in thin individuals. In some of these cases there is a hereditary tendency to obesity; while in others there is a congenital small lung, and as a result, deficient oxygenating capacity. Want of exercise, lack of fresh air, and improper expansion of the lungs are occasional causes; but the greater number of cases are dependent on excessive indulgence in food, especially saccharine and amylaceous articles of diet, as sweet wines, porter, beer, alcohol, starch, sugar and fat; and are also dependent on the defective metabolism of nitrogenous foods. It is seldom found in individuals before thirty, and more frequently after fifty years of age. Four cases are met with in males to one in females.

Pathology:—There is a certain amount of fat about every normal heart, found in the grooves between the auricles and ventricles, and between the ventricles themselves; but in cases of fatty accu-

mulation, it covers especially the right ventricle and finally the whole heart is enveloped; meanwhile the fat is passing along the intermuscular septum, giving rise to fatty infiltration, which, encroaching upon the myocardium, terminates ultimately in fatty degeneration.

Symptoms:—Some of these cases do not complain of any inconvenience. The symptoms, when present, are those indicating interference with the cardiac function; as indicated by the sense of weight or oppression about the heart, with difficult breathing, drowsiness, attacks of syncope and cyanotic tendency on exertion. The pulse varies, at times the wall of the artery is rigid, the pulse full, and the tension high; at other times the wall is elastic, the vessel empty, and the tension low. The respiration frequently becomes of the Cheyne-Stokes variety. Pulmonary edema may appear as the heart loses its strength. The urine becomes scanty, and albumen appears in it. There is edema of the ankles. Fatty accumulation with infiltration is one of the common causes of death, which is brought about by a rupture of the heart or syncope; but more frequently there is a gradual impairment of all the bodily functions.

Inspection:—Owing to the excessive amount of adipose tissue found in many of these cases, inspection does not reveal as much as under a more normal condition. Should hypertrophy be combined with the fatty condition, there will be a widespread precordial heaving and slight pulsation about the neck.

Palpation:—Shows a feeble cardiac impulse unless hypertrophy is present.

Percussion:—May outline a heart normal in size, but more frequently the area of cardiac dullness is increased, due to dilatation or hypertrophy, as fatty deposits alone rarely produce a perceptible enlargement.

Auscultation:—The heart sounds are feeble, low toned and weak, even when hypertrophy is present; this being due to the interference with the heart's action and the thickness of the thoracic parietes. Naturally the first sound suffers more than the second, and murmurs are not uncommon.

Diagnosis:—This is not easily made owing to the difficulty in making a physical examination in those suffering from obesity; but weakness of the cardiac sounds and impulse, together with general obesity should always lead to careful study in this particular.

Prognosis:—If there is evidence of marked myocardial changes or a history of hereditary tendency to obesity, or if the habits are such that the patient is unable to control himself, the prognosis should be given accordingly. Sudden deaths from rupture of the heart, and syncope, in fatty degeneration frequently occur.

Treatment:—The treatment resolves itself into the reduction of the obesity and the support of the heart. The diet must be carefully regulated so that with adequate nourishment there is no excess, and fats, sugar and starches should be eliminated so far as possible. The appetite should not be satisfied at any time, and all forms of liquor and tobacco should be forbidden. Great care is required in reducing the obesity, and a most careful examination

is first necessary, before any form of treatment is undertaken. The condition of the heart and arteries should be ascertained so far as possible; if the heart is sound, the pulse regular, soft, full and the organs generally are found to be healthy; active exercise such as is found in the modern gymnasium, or walking, as recommended as a part of Ertel's method should be prescribed. Where the patient is unable to follow this method of treatment the Weir Mitchell system is to be preferred, which consists of rest and passive exercise in the form of Massage and Swedish movement; with a skim milk diet that gradually replaces the usual diet until within a week's time it takes the place of the regular diet.

Many of the systems of reduction of obesity are dangerous, and while they may reduce the weight, I have seen two cases that continued being reduced until they died. Frequent bathing with cold or tepid water is beneficial. The bowels should be kept active. Recently the use of Kissengen and Vichy waters in this disease have received some attention. A large glass of one of these waters is taken after each meal for a week, and is then followed by the other for a week, this alternation is continued for several weeks. The acidity of the Kissengen may be increased by the use of lemon juice, and the alkalinity of the Vichy by the addition of the aromatic spirits of ammonia. I have followed this form of treatment in one case with benefit. Some recommend the sipping of eight ounces of hot water a half an hour before each meal. Thyroidine, five to eight grains per day, has assisted many cases; but fucus vesiculosus in ten to twenty-drop doses, three times a day; or sargassum bacci-

ferum, in the same doses, is often of more service. Bromide of ammonium has been used in doses ranging from five to ten grains three times a day. Phytolacca berry juice has the power of diminishing the amount of fat in the system. Graphites, lycopodium, calcarea carb. and ferr. phos. have controlled it in typical individuals, assisted by the regulation of their diet and proper exercise.

The action of the heart should be watched carefully and such remedies as sparteine, strychnia, digitalis and lycopus will assist in maintaining its action when indicated.

FATTY DEGENERATION.

This is a condition in which the muscular fibres of the heart have been replaced by fatty matter.

Etiology:—Among the remote causes is heredity. This is so marked in certain families that sudden death is common, and fatty degeneration is the most frequent cause. Men, more frequently, are victims than women. While cases have been reported as occurring in children two years old, it is seldon met with before middle or advanced life, when it is a part of a general senile change. Sedentary habits, and the abuse of alcohol are fruitful causes; among the more active causes is interference with the nutrition of the heart, which arises from a modification of the quality of the blood; as is met in phthisis, chronic suppuration, cancer, anemia, leucocythemia, diabetes, hemophilia, gout, and as follows severe hemorrhages. It is met as an accompaniment of many of the acute infec-

tious diseases as diphtheria, septicemia, typhoid, erysipelas, pneumonia and small-pox. It is produced by the introduction into the system of certain poisons, as alcohol, phosphorus, lead and arsenicum. Fatty accumulation with infiltration, hypertrophy and gumma produce a fatty degeneration; and a diminished activity of the heart will lead to the same conditions.

Pathology:—The appearance in fatty degeneration depends on whether the disease is general or local. The organ is not increased in size unless hypertrophy or dilatation is present; and if the degeneration is the result of some acute disease the heart may be smaller than normal. Owing to pigmentation, the result of destruction of the blood, the heart may present a darker color than normal; but when degeneration is the result of a pronounced anemia, the structure may be pale, having the typical "dead leaf" color. When the disease arises as the result of a local anemia the change is wholly localized.

The structural changes are so marked that the heart muscle may be torn as the result of a forcible systole. There is an actual increase of fat in the organ and it has a greasy feeling. The left ventricle is more frequently involved than the right. While the auricles are affected, they are much less frequently involved than the ventricles. The coronary arteries are diseased in the great majority of cases; arterial sclerosis, calcification or thrombosis being present. Other organs are affected in a similar manner as the heart, especially the liver and kidneys. As a result of the changes in the heart, there is weakening of the circulation and

venous congestion takes place in the dependent parts. Before any change can be recognized by the naked eye, the microscope reveals a number of small granules within the muscular fibres, which are usually arranged longitudinally; a little later there is an increase in the number of granules, a loss of striation, a disappearance of the nuclei of the affected fibres, and at a still later period the granules are seen to be large and translucent. Some fibres may contain nothing but these globules, but a greater number of the fibres are only partially affected, and while one fibre may be diseased the next may be healthy. Whether all the fat found in the tissue is developed within the organ or whether a part is from without, is still a debated question, with strong evidence in favor of the latter.

Symptoms:—The number of sudden deaths which the post mortem has demonstrated to be due to fatty degeneration, places indefiniteness of symptoms as the great characteristic of the disease. In many cases of cardiac enfeeblement, a careful study of the case will lead to this as a probable cause. Pain or distress about the heart is not a constant symptom, but in one of my cases it was present, extending sometimes to one, and occasionally to both shoulders, and was attended with a feeling of impending death. There is breathlessness on slight exertion, attacks of syncope, epileptiform seizures, cardiac asthma; angina pectoris appears at times and Cheyne-Stokes respiration is a late symptom.

Inspection:—It is frequently impossible to locate any apex beat.

Palpation:—May be no more successful in this particular, unless dilatation or hypertrophy be present.

The pulse, in cases due to some acute affections, may be 100 to the minute, but it is often found much slower than normal and may be but 15 to 20.

Percussion:—The area of cardiac dullness is not enlarged unless dilatation or hypertrophy be present.

Auscultation:—May not be able to disclose the first sound of the heart at the apex; and if it can be recognized, it is faint; but usually it is heard better over the lower part of the sternum. When an acute febrile disturbance is a cause, a systolic murmur may replace the first sound on both sides of the heart. Dilatation takes place sooner or later and it gives rise to symptoms resembling the fatty degeneration itself, as dyspnea, palpitation, a small, irregular pulse, and cold, clammy extremities. An acute dilatation, dependent on some sudden exertion, may occur. In some cases there is a comatose condition; in others a condition of insomnia is present; and delusions, which may take on a maniacal form, may appear and become permanent.

Diagnosis:—In such an obscure disease the diagnosis should be made with reserve. The existence of similar changes in other organs, a failing heart in acute diseases, a history of alcoholism, a full habit, a cardiac weakness with retarded pulse, epileptic attacks, Cheyne-Stokes breathing, the arcus senilis, tinnitus aurium and coldness over the cardiac region, justifies a probable diagnosis.

Prognosis:—The prognosis depends on whether it arises as a result of an acute or chronic disease. In those cases due to acute disease the immediate prognosis may be grave, but later favorable. If

due to chronic disease the immediate prognosis may be good; but the ultimate prognosis will depend on whether the degeneration can be controlled and the injuries done compensated for.

Treatment:— This will vary according as the cause of the degeneration is acute or chronic. If it is the result of some acute disease; absolute rest, appropriate food and diffusible stimulants, with such remedies as will maintain the heart's action, are indicated. The attendant should bear in mind that it is impossible to restore the muscular tissue that has been destroyed, and his endeavors should be directed to controlling the degeneration and maintaining the heart. Inhalation of oxygen is most efficient in this class of cases. The habits of the patient should be carefully studied, any irregularity corrected, and alcohol and tobacco stopped.

Fatty degeneration demands a diet nearly opposite to that for fatty heart due to obesity. The diet must be nutritious, and fatty foods, oils and starches are not objectionable, as the blood should be enriched by all possible methods. The following have produced fatty degeneration: Phosphorus, arsenic, plumbum, antimony, alcohol, chloroform, ether, iodoform, and the following acids: Phosphoric, nitric, sulphuric, oxalic and tartaric.

Agaricine is of great service in those cases dependent upon some acute disease where there has been profuse sweating; twitching of the muscles is a prominent symptom. The heart is weak and feeble with violent palpitation at times; the pulse is irregular. This remedy is of special service in those patients who have been addicted to the ex-

cessive use of tea, coffee or tobacco, or who have nervous dyspepsia.

Arsenicum is of service when its great constitutional symptoms are present; marked chilliness, with a desire for warmth; unquenchable thirst for small quantities of water at frequent intervals, the pain is burning in character, there is anxiety, restlessness and an anguish that allows of no rest, with great oppression of the chest; violent and unsupportable throbbing of the heart, chiefly when lying on the back, especially at night. The left side of the heart is more frequently affected under this remedy.

Cuprum met. is indicated when the pulse is irregular, intermittent, small, very slow and easily compressible; there is great muscular debility; the beats of the heart are scarcely or not at all perceptible; the sounds are not distinct; there is nausea, with pressure on the stomach, anxious oppression of the chest, with dyspnea, feeling of anxiety, trembling of the hands and feet so he cannot walk and pale ness of the face.

Ferrocyanuret of potassium is indicated in those of an enfeebled constitution; the digestive organs are weakened; there is sour stomach and flatulence; pains are complained of in various parts of the body; and insomnia is pronounced. The pulse is feeble and easily excited; hands and feet are cold. There is palpitation of the heart, tinnitus aurium with vertigo, and there is every indication of an impoverished condition of the system.

The apoplectiform seizures have been relieved by hydrocyanic acid and gelsemium.

Hydrocyanic acid will prove of benefit where

the heart action is very weak, an irregular pulse, hardly to be felt; clammy sweat, dilated pupils, breathing slow, deep and gasping. On account of weak contractions of the heart there is falling and stupefaction.

Under gelsemium, the heart is slow and feeble, the beats cannot be felt, yet the patient desires to move, but when he attempts to move, the muscles refuse to obey the will and there is a lack of co-ordination.

Iodide of arsenic is called for when there are indications of failing heart, especially in those advanced in years. The pulse is shotty, there is shortness of breath on slight exertion, with precordial anxiety and pain; weakness, restlessness, and prostration are marked, and arterial sclerosis is present.

Nitrite of amyl or glonoine is frequently of service during the attacks of syncope, as are indicated by the symptoms presented.

Phosphorus has afforded relief in the typical tall, narrow-chested, stooping, dark complexioned individual, who is worse from warm foods and drink, and from lying on the left side; there is hypochondriacal sadness, great irascibility; fullness, tension and lancinating pains in the chest. There are fainting fits; venous stasis; and the right side of the heart is most involved.

Plumbum is indicated when cardiac impulse is very feeble or not perceptible at all, the heart sounds are distinct and there is palpitation with excessive dyspnea at times, the pulse is intermitting, irregular and of low tension, and at times it may be as slow as fifty to the minute, again it will be

above one hundred and hardly perceptible. The heart is large and flabby; from slight exertion there is muscular debility, oppression and fainting spells. The patient is melancholy and anxious; the bowels are constipated, the stool being in form of balls and there is edema of the skin.

Strychnia stimulates the heart muscle, the muscle of respiration; and by regulating their action, relieves the dyspnea. It is indicated in those nervous irritable individuals, whose nervous systems have been undermined by the loss of sleep, overwork, etc. Sparteine sulphate is indicated when compensation is failing and the heart's action is weak; the pulse is irregular, feeble and dropsy is present; there are dyspeptic symptoms with great accumulations of gas in the gastro-intestinal canal, and the patient is subject to nervous and hysterical attacks.

Vanadium 6x is of service in strengthening the heart's action when there is present fatty degeneration of the liver and heart, with degeneration of the arterial walls. It will be found of special benefit in those cases where anemia, chronic rheumatism, diabetes, neurasthenia, or tuberculosis is the exciting cause. It increases the appetite and strengthens the digestive function.

Veratrum viride is of use when there is pronounced slowness of the heart with a pulse that is full and large; when vertigo complicates this slow pulse, sanguinaria is to be thought of; if with the slowness there is irregular action, then digitalis must be studied.

Zinc phosphide is indicated when muscular

tremor is a marked symptom and there is present debility, paralysis and mental depression. The patient is emaciated, cachetic, looks prematurely old, has no appetite, and the digestive process is painful.

If the Cheyne-Stokes respiration is a marked symptom, atropine should be studied.

The physician should as far as possible differentiate fatty accumulation from fatty degeneration, in the first a cardiac tonic might at times be permissible, but it is always dangerous in the latter.

CHAPTER XI.

SPONTANEOUS RUPTURE OF THE HEART.

This may be partial or complete. When the papillary muscle or the trabeculæ ventriculi are lacerated, the term partial is applied. When the whole thickness of the myocardium is involved, it is said to be complete.

Etiology:—Spontaneous rupture never occurs in a healthy heart. It is most frequently seen in those of advanced years, and in males more frequently than females. In the majority of cases there is present some predisposing cause, as degeneration of the coronary arteries, myocarditis, or fatty heart. Of the exciting causes, muscular efforts have been most frequent, but it has been known to occur during sleep.

Pathology:—The rupture is most frequently found in the left ventricle, on the anterior surface, near the apex. The direction of the rent varies. The pericardial sac is filled with blood, either fluid or clotted. The myocardium is paler than in health, and under the microscope shows various forms of degeneration; atrophic lesion of a granular or pigmentary nature; and frequently, an increase of fibrous tissue. In many cases the coronary arteries show a degeneration, and valvular lesions and endocardial changes are common.

Symptoms:—In the majority of cases death occurs at once, but the patient may survive a few hours or days. Five cases have been reported where the patient lived two days; one case where he lived twelve days; one case where he

lived one hundred and sixty-eight days; and one where pericardial adhesions and fibrinous clot brought about a closure of the rent and the patient survived fifteen years and then died of a second rupture. In those cases where life is prolonged, the symptoms are those of internal hemorrhage with precordial pain, that may be so agonizing as to simulate angina pectoris, radiating to one or both shoulders and arms. The temperature becomes sub-normal; the surface of the body is pale, cold, and covered with a cold prespiration; the pulse becomes small and frequent, and soon cannot be counted at the wrist. Giddiness, vomiting, syncope and a rapid termination of the breathing closes the scene. At times, the victim falls; there are a few rapid respirations and he is dead. If life is prolonged, a physical examination shows symptoms of heart failure and an increased area of cardiac dullness.

Diagnosis:—This is not always easy. In those cases of instantaneous death, it can only be by inference; while in those that are prolonged, the symptoms of cardiac failure, internal hemorrhage, pericardial effusion, and pain points strongly to this as the cause. It should be remembered that the pulse with angina pectoris is usually resistant and regular, while it is feeble in rupture.

Prognosis:—Usually, death.

Treatment:—The physician should warn those with a degenerated cardiac muscle of the importance of keeping quiet and avoiding undue exertion. If the rupture has occurred, keep the patient quiet and make cold applications to the precordial region

and heat to the extremities. Use no cardiac tonics.

ANEURYSM OF THE HEART.

This is a localized pouch-like dilatation of one or more of the divisions of the heart wall. It may be acute or chronic.

Etiology:—It may appear as the result of heavy muscular exertion, acute myocarditis, fatty degeneration or syphilis. In the chronic forms, there is a stretching of a weakened area of the cardiac wall that is largely fibroid.

Pathology:—They may be single or multiple, and vary in size from that of a pea to that of a cocoanut. They are seen most frequently near the apex on the anterior wall of the left ventricle. The heart is usually enlarged; it may be hypertrophied or dilated. Pericarditis is frequent, and adhesions often are a result. The tumor usually has a constricted neck. Layers of fibrin and blood clots are formed in the sac.

Symptoms:—There are no symptoms that are typical of cardiac aneurysm. Palpitation and irregularity are among the early symptoms, while pain and dyspnea appear later. While a murmur may be present, there is nothing about it that is characteristic. The apex beat may be diffused and weak. If the aneurysm is large, the area of cardiac dullness is increased. After a prolonged disturbance of the heart's action the development of chronic pericarditis is very suggestive of aneurysm.

Diagnosis:—It is impossible during life to positively diagnose these cases.

Prognosis:—From post-mortem, we know that about one-fourth of the recorded cases gave no symptoms of existence during life and were first revealed by the autopsy. Where it is possible to make even a probable diagnosis, the prognosis is not good.

Treatment:—This is dependent upon the diagnosis being correct. Cardiac tonics should be avoided, rest in bed is advisable and the resistant muscular exercise adopted.

NEW FORMATIONS.

All forms of malignant growth are met with in connection with the heart. They are most frequently secondary. While found at any age they usually appear about the middle period of life, more males than females being afflicted. Of the benign growths, fibromata, lymphomata, myomata, lipoma and cardiac cysts have been demonstrated. These may be latent or they may give rise to cardiac disturbances, as precordial pain, breathlessness, an irregular, weak cardiac impulse and weak heart sounds. When there is a tendency to heart failure without valvular lesions, rheumatism, alcoholism, there is known to be a cancer elsewhere, or a marked cancerous cachexia is present, it should always lead one to think of a possible involvement of the heart. The prognosis in the cancer of the heart is grave and the treatment is symptomatic.

TUBERCULOSIS OF THE HEART.

The myocardium does not suffer from tuberculosis to the extent that the serous membranes of

the heart do. It may result from a chronic tuberculosis of adjacent organs, but more frequently it is found in connection with acute miliary tuberculosis. It appears as gray tubercle and large caseating masses of myocardium. Under whatever form it may appear; the symptoms are so obscure that a positive diagnosis is difficult during life, and a post mortem has been the confirming test. At times, tuberculosis of the valves has been noted in connection with pulmonary and mediastinal tuberculosis.

CARDIAC EMACIATION OR ATROPHY.

This is diminution in the size and weight of the heart due to a lessened amount of muscular tissue.

Etiology:—This may involve the whole or a part of the heart. Some hearts are small in proportion to the body; this may be congenital or the result of arrested development. Old age produces the senile heart, which is small. A frequent cause is some of the wasting diseases, as tuberculosis, cancer, diabetes, etc. A loss of blood, degeneration of the coronary arteries, pericardial adhesions and fatty heart have also been responsible for cases.

Pathology:—Diminution in size and a loss of weight are the two principle changes—with these there is a loss of fat from about the organ. The color is paler than in health and the surface has a wrinkled or puckered appearance, is dense and hard to the touch. Under the microscope the muscular fibres are smaller than in health, the

muscular cells diminished in size, have lost their cylindrical appearance and become fusiform.

Symptoms:—The prominent symptoms are often those that accompany the condition that induces atrophy, as breathlessness, palpitation on exertion, and edema of the dependent parts.

On physical examination, the arteries are empty and the tension of the pulse is low. In making the examination the condition of the lungs should be ascertained; as any retraction of the lungs makes the heart appear larger than natural, and any distention (as emphysema) makes it appear smaller. The cardiac impulse is usually weak. The apex beat may appear to be strong owing to exposed condition. If the heart is close to the chest wall the cardiac sounds may appear abnormally clear, otherwise they are weak.

Diagnosis:—This is often problematic. But an actual diminution in the area of cardiac dullness, with a feeble and low tensioned pulse, breathlessness, weakness, and the presence of some disease that is capable of producing such a condition is evidence enough to pronounce it a case of atrophy of the heart.

The prognosis depends on the primary disease.

Treatment:—This must be directed to the management of the constitutional symptoms. Absolute rest with the employment of those means that will control waste and strengthen the heart is indicated.

SYPHILIS OF THE HEART.

Etiology:—This may be the result of heredity or infection.

Pathology:—The muscular walls are the usual seat of the trouble; but the valves, especially their bases may be involved alone. The changes may consist of either fibroid formations or true syphilitic gummata.

Symptoms:—During the treatment of every case of syphilis a careful examination of the heart should be made from time to time, in order that no structural change appears and gains a hold unperceived, and that the condition of the heart may be known if possible, before syphilitic changes take place. The symptoms vary according as the myocardium or valves are the seat of the original disease. If they are confined to the myocardium they appear slowly. There being a gradual loss of cardiac strength, and pericarditis or endocarditis appears as the surface of the myocardium is approached by the new formations. This class of cases terminate suddenly; in those cases where the valves are the seat of the original disease, the symptoms appear slowly and are usually first noticed when the secondary conditions present themselves; as hypertrophy or dilatation. Acute aortitis is common where the endocarditis involves the aortic valves. Fibroid degeneration, aneurysm, dilatation and valvular lesions are the principal sequelæ.

Diagnosis:—This must be based upon the history of the case, upon the presence of similar lesions in other organs, and the relief obtained from treatment.

Prognosis:—Syphilis of the heart is nearly always found in cases that have been neglected, and proper treatment should prevent it in acquired

cases. When the heart is once involved, the prognosis depends on whether or no the structural changes have advanced to such a stage that they have become fibrinous; if they have, aneurysms are liable to develop, independent of the integrity of the surrounding tissue. When the valvular changes are most pronounced the compensation will not be perfect, as the myocardium has suffered to a certain extent. If the disease is arrested by the treatment, such growths as have not already become fibrinous may be absorbed. Death may result from syphilitic marasmus, or from rupture of the heart.

Treatment:—This implies the careful management of every case of syphilitic infection, and a constant observation for from three to five years after its last exhibition, that it may be known to be eradicated from the system. When it is recognized as involving the heart, the patient should be put to bed and all muscular effort forbidden until the actual cardiac strength is determined; and the muscular strength regained if it is lost. The diet should be such as will assist in restoring the heart muscle, a nitrogenized diet being the best. When the patient is confined to the bed inhalations of oxygen is often of service. If the heart needs assistance in overcoming the valvular defects, nitroglycerine, strophanthus and digitalis are of service, but should be used very carefully; especially if the myocardium is involved. Pneumotherapy may be of service in assisting compensation and equalizing the circulation.

WOUNDS OF THE HEART.

These occur more frequently in the right than left ventricle, and in the right than left auricle. The injury has been of different kinds and the opening of various forms and sizes.

Symptoms:—These vary with the extent of the injury; when the wound is large there is collapse, syncope and death. Should the injury be one where the wound is small, or involves in any way the coronary arteries, there is a gradual paleness with weakness of the pulse and a weakened cardiac sound and impulse, with a degree of faintness and possible vomiting on nervous disturbances. At times, the opposite symptoms may present themselves in the form of a frequent and forcible pulse and cardiac excitement.

Physical Signs:—These may not reveal anything that is definite; in some cases there may be an increase in the area of cardiac dullness, and a murmur may be produced by the escaping blood, that is hissing in character.

Adjacent organs often suffer laceration as well as the heart.

Diagnosis:—It is not always easy to decide whether the heart is implicated or not. External hemorrhage, unless severe, is not diagnostic. A knowledge of the instrument causing the wound, and the depth it penetrates, often assists. It is not advisable to probe the wound for diagnostic purposes, as it may displace a clot. The profuseness of the hemorrhage is to be taken into consideration, more than its persistence.

Prognosis:—It should be remembered that ap-

parently serious lesions have been recovered from, while the more trivial have proven fatal. Most frequently the gravity of a case depends upon the first shock and the degree of the hemorrhage; a mild degree of pericarditis is not unfavorable, but an endocarditis is always unfavorable.

Treatment: — The first question is whether the case is such as to demand surgical interference; in such cases there is cardiac compression; removal of foreign bodies, the removal of portions of fractured ribs, or septic material, and the sewing and drainage of the pericardium. The indication in this class of cases is to control the hemorrhage, relieve the shock and maintain the heart. Cardiac stimulants should not be used. The patient should be kept quiet and the pain relieved. Unless there are marked indications, clots should not be removed; and cold applications may be used if symptoms of secondary inflammation arise, and the case treated symptomatically.

Ligatures have been inserted, to close the wound, with success.

AMYLOID DISEASE.

This is the result of chronic malaria, syphilis, lead poisoning or the continued suppuration of a bone. The amyloid material is found deposited in the interstitial tissue of the myocardium and along the line of the blood-vessels. Similar changes are to be found in other organs as the spleen, liver and kidneys; and its presence in these organs must be relied on in making a diagnosis.

CALCAREOUS DEGENERATION.

Calcareous infiltration of the myocardium has been noticed occasionally during post mortem.

CHAPTER XII.

ENDOCARDITIS.

Endocarditis is an inflammation of the endocardium or lining membrane of the heart.

When confined to the valves it is termed valvular endocarditis. When limited to the membrane lining cavities it is called parietal. Clinically it presents an acute and chronic form. The former may be simple or malignant, the latter is fibrotic.

The right side of the heart is most frequently involved during fetal life and in many cases of the malignant form, apart from this the left side is most frequently involved.

SIMPLE ACUTE OR VERRUCOSE ENDOCARDITIS.

Etiology: — Acute articular rheumatism is the most frequent cause, 70 per cent. of the cases having been attributed to it. In the severe types of rheumatic fever both the endocardium and pericardium are involved, while in the milder form but one membrane may be affected. It is during the second week of rheumatic fever that the endocardium shows involvement generally, but in some cases the endocarditis is the first symptom of a rheumatic attack. Chorea and acute tonsillitis in those of rheumatic tendencies are frequently associated with endocarditis, as well as many of the acute infectious diseases; as scarlet fever, measles, influenza, the confluent form of small pox, pneumonia, diphtheria and gonorrhea. In those cases of acute Bright's disease where the

pericardium is involved, endocarditis is nearly always present. As many of the diseases with which endocarditis is associated are diseases of childhood, it is not surprising that it should be frequently seen early in life.

Pathology:—The changes are confined for the most part to the valves; but occasionally is found upon the walls. When on the valves, it is on the side exposed to the blood current, where there is the greatest friction when the valves close. Early in the process there is a proliferation of the connective tissue corpuscles, which results in numerous small round cells; these at first are in masses, but gradually spread out, into the areolar tissue next to the myocardium. The endothelial covering of the affected parts gives way, the round cell infiltration projects into the blood current, and a deposit of a fibrin takes place on the exposed surface. These fibrinous vegetations or cauliflower excrescences may be as large as a pea, and interfere with the blood current. They may become fibrinous and a chronic fibrinous change result, they may undergo a necrotic degeneration, or an ulcerative process may separate them and the emboli cause infraction in different organs.

Symptoms:—Cases occur in which there are no symptoms indicating the involvement of the endocardium, in nephritis there may be a rise in the temperature of one or two degrees. The patient complains of dyspnea, and palpitation may be discernible by palpation, and he inclines to the left side. The pulse may not be increased in rapidity. If there is much involvemet of the myocardium, distress in the precordia and dyspnea is

more pronounced. Inspection and palpation during the early stages may show an increase in the force and area of the apex beat. While percussion gives negative results, auscultation may not reveal any murmur during the first week. The first derangement noted by auscultation is a prolongation of the first sound of the heart, which is gradually replaced by a murmur and other evidence of disturbance of the circulation, as indicated by palpitation and irregular heart action. It should be remembered that murmurs occur from other causes than diseases of the valves, and that endocarditis may exist without a murmur.

Diagnosis:—In many cases this is difficult, again it may be difficult to say whether the case is simple or malignant. The history of the case and general symptoms should be studied carefully.

Prognosis:—Complete recovery is not the rule. The greater percentage of these cases terminate in chronic fibrotic changes, other cases may become malignant. When death results from embolism this is indicated by the enlarged spleen.

Treatment:—Patients subject to rheumatic attacks should wear flannel next the skin constantly; with the appearance of an attack they should go to bed, the extremities be kept warm and thus relieve the peripheral circulation. The diet should be restricted to milk. If milk is objected to, it may be combined with vichy or seltzer water. The room should be well ventilated and the temperature kept between 70° and 75° F. It is doubtful if any local application is of service. When the patient is placed in bed he should be between flannels. The fluids taken should be restricted so far as possible.

When there is much nervous excitement a warm bath, 90° to 95° F., repeated two or three times during the twenty-four hours has a soothing effect. In treating those conditions that give rise to endocarditis every care should be taken to avoid its appearance as a complication. When pain becomes a marked symptom, hot applications are beneficial. During the very early stages cold applications may be of service.

Veratum viride:—This remedy is frequently the first demanded by the case when the heart's action is violent. There is congestion of the lungs. The patient is full blooded and plethoric; the pains are violent; the fever is high; the tongue is white or yellow, with a red streak down the center.

Aconite:—Is indicated by the general febrile condition. The temperature is high: the pains are acute and there is the anxiety, restlessness and fear of death that characterizes this remedy.

Spigelia:—There is a sensation of great pressure in the chest, with violent palpitation and cutting pains in the heart, that extend down the left arm. There is violent palpitation of the heart, so that it can be heard and seen through the clothing.

Cimicifuga:—This remedy should always be studied when endocarditis appears during chorea or rheumatism, in which the bellies of the muscles are most involved. Besides the violent aching pains in the parts affected, there is a severe headache either confined to the forehead or top of the head, when it appears as if the top of the head would fly off. There is also pain under the left nipple and down the left arm.

Convallaria:—Will be found of service, not during the very acute attacks, but when the temperature is nearer normal, the heart action is still forcible, there is great nervousness and dyspnea.

Digitalis:—This remedy should be studied carefully before it is given in endocarditis; but when there is vomiting, vertigo with delirium, increasing dyspnea, spasmodic cough, expectoration with mixed blood, livid turbid face, and the patient cannot lie down or be moved without dyspnea.

Cactus grand:—There are sharp pains with oppression of the breathing; great palpitation, pulse is quick, tense, and there is a sense of constriction about the heart.

Arsenicum:—When, late in the course of the disease, the pulse becomes weak, soft and irregular; there is dyspnea with restlessness and anxiety. There is more or less edema of the cellular tissue, and hyperemia of the liver.

Bryonia alb.:—When there is a high fever with an intense frontal or occipital headache, the least motion aggravating the condition, this remedy should be studied.

Belladonna:—Will be found of service, especially in children when there is throbbing of the cerebral arteries, violent action of the heart, a hard pulse, intense headache with delirium or stupor, aching in the cardiac region, with injection of the conjunctiva and dilated pupils.

CHAPTER XIII.

MALIGNANT ENDOCARDITIS.

Synonyms:—Ulcerative, infective, diphtheritic.

Definition:—This is a destructive inflammation of the endocardium, the result of micro-organisms that occurs in connection with blood poisoning, the symptoms being those of the latter.

Etiology:—It may result from any disease where sepsis is possible, as septicemia, pyemia, puerperal fever, pneumonia, erysipelas and any ulcerative process. A depraved condition of the system or a lowered vitality favors its development.

Pathology:—The most marked changes are confined to the valves and chorda tendinea and are in the form of vegetations, ulceration and suppuration. The development of the vegetations is much the same as found in simple endocarditis. They vary in size, some being as large as a pea and of a greenish yellow color. On account of the infection present, they are soon cut down by a necrotic process which may involve the endocardium; or by a process of ulceration; assisted by the blood current, the vegetations are loosened and the emboli carried to some organ where an infection takes place; this is most frequently in the spleen, after this the kidneys and meninges. The former seat of the vegetations now becomes an ulcer which may be superficial or deep. At times, abscesses form in the valves, and rupturing, leave a weakened point that may give rise to dilatation or perforation; with so much septic material in the blood it is not

surprising that a septic or typhoid condition develops.

Symptoms:—At times the symptoms of the cardiac involvement are over-shadowed by those of the preceding disease. Frequently the first thing noted is a marked chill which is followed by a fever that is remittent, intermittent or typhoidal in type; prostration is pronounced; the pulse is rapid and the perspiration is profuse.

Physical examination shows an enlarged spleen; the other organs show infection.

In the typhoid form the symptoms are not as pronounced as in the septic form. The disease takes a more chronic course. At first there may be only an intermittent pyrexia but sooner or later the patient becomes apathetic, the tongue is brown, sordes appear on the teeth; there is a low muttering of delirium, with subsultus tendinum and a profuse perspiration. The temperature is high, but irregular, and chills may appear from time to time. The patient gradually drifts into unconsciousness and coma. The cardiac signs are often wanting, but petechia and embolic infarction assist the diagnosis.

The septic form is met with most frequently in connection with puerperal sepsis, or some suppurative process. But the chill, fever, profuse perspiration found in pyemic conditions, with delirium, metastatic abscesses, rapid pulse and respiration with jaundiced condition, leave no doubt that a pyemic condition is present; but the absence of any endocardial symptoms may lead one to believe that no such condition exists, until a post mortem reveals it.

Diagnosis:— This is difficult, as it is liable to

be mistaken for typhoid fever, and at times acute simple endocarditis. It should be remembered that in typhoid fever there is neither rigor nor evidence of embolism; the previous history of the case and Widal's reaction should distinguish it. It may be differentiated from simple endocarditis by the lack of the pyemic condition in the latter.

Prognosis:— It is fatal in all well authenticated cases.

Treatment: — The treatment is not satisfactory as the disease is fatal. The patient should be kept quiet, to give the heart all possible rest. The chest should be protected with flannel or cotton-wool. The diet should be nutritious but simple and easily digested. The quantity of fluids taken should be as low as possible. Baths are frequently of great service. They should be warm, 90° F., and repeated during the twenty-four hours. Hot applications over the precordia often bring relief.

If the result of streptococcus, the anti-streptococcus serum might be tried.

Arsenicum alb.:— This remedy meets the toxic condition that is present in many of these cases. The pulse is feeble and irregular, it may be slow or fast. There is great anguish and restlessness with a cachetic appearance; the skin is cold and pale. There is great thirst and a sensation of inward heat.

Lachesis:—This remedy should be thought of when there is rapid decomposition of the blood with hemorrhages from the mucus membranes, the inflammation being of the most malignant character. All the symptoms are worse after sleep. The face presents an expression of great suffering. The

tongue is dry, black, stiff and cracked, and trembles when the patient protrudes it.

Crotalus horridus:—This remedy is adapated to all fevers that assume the low typhoid type, with great prostration, languor, and frequent fainting spells. Hemorrhages appear from all of the orifices of the body; even from the pores of the skin. It produces great trembling of the whole body. The symptoms are most pronounced on the right side of the body and has more influence on fat people than those that are lean.

Phosphorus: — The patient upon whom this remedy acts most favorably is tall, slender, with a fair skin, sanguine temperament, sensitive disposition and of quick and lively perceptions. It should be studied in fever, where the injury to the vital force is pronounced the result of absorption of poisonous matter, from the products of malignant disease. One cardinal indication that is often complained of, is a sensation of great weakness and emptiness in the abdomen.

Echinacea angustifolia:—From the proving and clinical observations comes the evidence that we have here a great remedy in septic conditions. It has produced loss of appetite with weakness in the stomach and formation of large quantities of gas that passes both up and down; there is pain in the right hypochondriac region, with loose, yellow and very offensive stools, that are followed by great exhaustion. The face becomes pale, the pulse slow and great weakness is complained of.

Salicylic acid 1x:—In dealing with septic conditions, this remedy should be studied, as it controls many of these conditions.

CHAPTER XIV.

CHRONIC OR FIBROID ENDOCARDITIS.

This may appear as the result of an acute inflammation or it may be chronic from the beginning.

Etiology:—Of the causes of chronic endocarditis some are operative during embryonic life. In certain families there is a tendency to fibrotic degeneration, while in others it has been ascribed to gout, syphilis and alcoholism. It has been estimated that fifty per cent. of the cases of chronic endocarditis is caused by rheumatism. While measles, chorea and pneumonia are each the cause of some cases. Occupations that demand long continued, heavy muscular exertion develop endocarditis and a degeneration of the myocardium, when coupled with high arterial tension. This degeneration is one of the results of old age; and is noticed in certain families as a hereditary tendency, which is probably due to certain toxic chemical substances circulating in the blood. Traumatism has been followed by endocarditis at times. It has been observed that in early life it is the mitral valve that is most frequently diseased, while later it is the aortic. The mitral is the one most frequently diseased in women, the aortic in men.

Pathology:—The fibrotic changes may be confined to the valves or to the endocardium lining the cavities of the heart. It may involve the whole valve or any portion of it. Among the cavities, the endocardium lining the apex of the left ventricle is most often infected. The changes met with

consist of an infiltration of the sub-endothelial connective tissue with round cells, which develop into a fibrillated structure, and as a result there is produced a fibroid thickening of the endocardium which may be uniform or nodular. This fibroid tissue contracts, giving rise to deformity and agglutination of the cusps. These changes are first noticed in the corpora arantii. When the aortic valve is involved there is the formation of a dense fibrous ring at the base of the cusps; when the mitral valve is involved there is thickening, contraction and adhesions of the cusps, with a contraction of the chordæ tendinæ; which draws the cusps back toward the papillary muscle and does not allow a closure of the auriculo-ventricular orifice. On account of the thickening and contraction of the cusps, an insufficiency is brought about. This thickening and adhesions of the edges may increase until the whole appearance of the valve is changed and there results a small slit in a fibrous diaphragm, which is known as the buttonhole slit. At times, on account of the contraction of the fibrinous ring at the back of the cusps and the rigidity of the valve, stenosis takes place to such an extent that the mitral orifice is like an inverted cone. Frequently, incompetency and stenosis is associated at the same orifice. When the fibrotic change has taken place its tendency is to undergo necrotic and calcareous degeneration. Lime salt is deposited until the whole valve becomes a calcareous mass. At times ulceration is associated with these calcareous changes and when once started, has a tendency to progress. These changes may be arrested at any stage and the process be renewed again.

Symptoms:—Chronic endocarditis, in itself, produces no characteristic symptoms. It is only when its secondary effects are observed in derangement of the circulation that they produce the characteristic features. Pyrexia will only be present when there is an acute attack of the chronic affection. There is no change in the temperature, and so long as the compensation is full, there is nothing in the pulse or respiration to indicate its presence. The local symptoms and physical signs of chronic endocarditis are connected with the valvular lesion, and the circulatory disturbances that they produce are considered under the various valvular lesions.

Diagnosis:—The diagnosis of chronic endocarditis is that of the valvular lesion which it produces.

Prognosis:—No just opinion can be expressed with regard to any of these lesions without a knowledge of the effects of the particular lesion upon the myocardium, and this requires close observation of the case for some time. A single lesion is always more favorable than a mixed one. And much depends upon the cause, the factors that are now operative, and those that are liable to follow. The family history is always to be taken into consideration, whether they are long or short lived, and whether they were subject to valvular disease. Age should be considered, as at the extremes of life valvular changes are dangerous, and often cause death about the period of puberty. The habits of the patient must always be considered as well as the occupation and surroundings. It must be ascertained if the patient is addicted to the use of alcohol or if there is a uric acid diathesis, a renal

or specific affection present. The nature of the lesion should also be considered, its extent, mode of origin, length of duration and the gravity of the particular lesion; as aortic incompetence is worse than mitral incompetence and a mitral obstruction worse than an aortic obstruction. Of their mode of origin, those from a sclerotic process are less serious than those from rheumatism, as the latter are always subject to acute attacks. The effect of the lesion upon the heart itself and the other organs and functions, must also be taken into consideration.

Treatment:—Valvular lesions in themselves do not demand treatment, it is only when they are attended with other lesions or disturbances that it is necessary. Prophylaxis, while of service in certain forms of heart disease, is not applicable here, as many of the cases do not consult a physician until well established. Age and sex must always be taken into consideration in the treatment, as they form limitations to the treatment. In those cases where compensation is full, while medicine may be of no service, yet there is a task in watching that no unnecessary strain be produced. The residence should be, as far as possible, in a climate that is favorable and where the extremes of temperature are not marked. The diet should be regulated that it may not contain an excess of nitrogenous food, while the quantity of alcohol and other stimulants should be carefully regulated, if allowed at all. The occupation should be such that sufficient exercise in the open air can be obtained to keep up a healthy condition of the system. In all cases the amount of rest and exercise should be regulated,

that all the functions of the body may be kept in a healthy condition.

In advising with reference to the life of a young subject with valvular disease, it is not advisable to withdraw them altogether from the activity of the world, but rather to have a life of fairly good exercise, and one where the mental strain is not too pronounced. An intelligent patient may do much to avert trouble, if the nature of the lesion is explained, that he may know his limitations. The patient, while the lesion is compensated for, should be careful about moving to high altitudes. A great deal may be accomplished by attention to the diet of cardiac patients. The meals should be taken regularly; five to six hours apart and no food between, unless marked cardiac failure is present, when the food should be in a concentrated form and taken every three hours.

Digitalis purp:—When this remedy is indicated there is great anxiety, oppression, dyspnea, with fainting and sinking at the stomach. There is extreme prostration and exhaustion. The patient falls as if he were dying, and has a sensation that the heart would stop beating if he moved. The pulse is feeble, irregular, fluttering and intermittent; or it may be very slow, when any motion as rising from a chair or bed will cause it to become rapid, weak and jerky. The face may be pale and death-like, or there may be a blueness of the skin, lips and tongue. Respiration is difficult, sighing and irregular. There is coldness of the extremities, with a cold clammy perspiration.

When for any reason, another remedy must be chosen similar in its action to digitalis, the follow-

ing should be studied: Strophanthus, convallaria, adonis-vernalis, oleander and euonymus.

Cactus grand.:—This remedy has a profound action upon the heart and may be demanded in any form of cardiac distress. "When it is indicated," the patient believes his disease incurable; there is fear of death, and he complains of a great pressing in the head as if a great weight lay on the vertex, which is better from pressure. There is a sensation of constriction in the heart as if an iron band prevented its normal movement. Palpitation of the heart continues day and night, is worse while walking, during the night and from lying on the left side. There are pains at the apex of the heart which shoot down the left arm to the finger tips. The pulse may be irregular, at times it is fast, again slow.

Naja tripudians:—This remedy will be found of service after acute inflammations, where it will clear up many valvular affections. Both the physical and the mental powers are depressed. There are severe stitching pains in the region of the heart, with fluttering and palpitation of the heart. The pulse is slow, irregular and weak. An irritating cough with tightness, fullness in the region of the larynx with hemoptysis is noticed in many of these cases. The naja patient is melancholy, and broods over imaginary difficulties, has a dull frontal headache and severe throbbing and aching in temples. All symptoms are worse from the use of stimulants, and are better from walking or riding in the open air.

Convallaria majalis:—This remedy will be found

of most service when the right side of the heart is suffering from disease of the lungs, as emphysema, and in cases where a respiratory stimulant is demanded. The heart's action is weak, exercise causing a fluttering sensation which will continue but a short time, when the heart will appear to stop beating and then start suddenly, causing a faint feeling. The pulse is intermittent, but full and compressible. At times there is great pain in the uterine region. It will be found to relieve the dyspnea accompanying emphysema and fibroid phthisis, and should be studied in orthopnea, the result of disease of the mitral valve. The dyspnea is aggravated by moving, there is faintness with palpitation of the heart and the desire to take a deep breath. When this remedy is indicated the tincture, one or two drops every three hours, has given good results.

Lycopus Virginicus:—This remedy is indicated in different pathological conditions of the heart, in endocarditis following rheumatism; it is frequently of service when there is constricted pain and tenderness about the heart, of a rheumatic nature. The heart sounds may be indistinct, or the cardiac action so tumultuous and forcible that it can be heard at a distance. The pulse varies; at times it is quiet, intermittent and feeble. There is often a cough with pulmonary irritation and hemoptysis with pain in the chest and cardiac weakness.

Strophanthus hisp.:—This remedy is indicated when the heart's action is weak and rapid from muscular weakness and there is the irregular rhythm that is characteristic of mitral stenosis; when dyspnea is present especially of the nervous type.

In the heart failure of the aged, and in heart disease of children it is often of great service.

Kalmia latifolia:—This remedy produces pain that simulates rheumatism, which is worse in the muscular system. The pains and rheumatism extend from the centre to the periphery and shift suddenly. There is rheumatism with oppressed breathing, with stitching pains in the lower part of the chest and through it, above the heart to the shoulder blades, with pain in the left arm. There is palpitation of the heart, with hypertrophy, valvular insufficiency, anxiety and oppressed breathing. The pulse is weak and quick, or slow and feeble. There is pain and pressure in the arm.

Ferrum:—This remedy is frequently indicated in this class of cases, in persons of sanguine temperament, who are pettish and quarrelsome, easily excited, and the least contradiction angers them. The face, lips and mucous membrane is pale but becomes red and flushed on the least pain, exertion or motion. They are subject to headache which continues for several days, it is hammering, beating or pulsating in character, causing the patient to lie down; during this time there is an aversion to eating or drinking. The digestive organs suffer and there may be great hunger or loss of appetite, with extreme dislike for food; at times there is vomiting of everything as soon as taken, or a diarrhea of an undigested stool present. The patient is relieved by walking slowly, but the great weakness causes him to lie down soon; congestion of the lungs with hemoptysis is often present, with palpitation of the heart, and anemic and organic cardiac murmurs may be present.

Arsenicum alb.:—When this remedy is indicated there is great emaciation with restlessness, anxiety and a loss of strength so that the patient can hardly walk, especially after great exertion as mountain climbing. There is violent palpitation of the heart, especially at night, which is visible and audible. The pulse is quick, weak and irregular.

Arsenicum iod.:—This remedy will be found of great service when there is, in connection with the symptoms just mentioned under Ars. alb., marked fibroid degeneration of the heart and arteries.

Aurum mur.:—This remedy produces an increased activity of the heart's action. The lungs are hyperemic. The least exertion produces a sensation of a crushing weight under the sternum. There is congestion of the blood in the other organs; and frequently a history of acquired syphilis; and melancholy is present. The heart and arteries often show degeneration. There is sensitiveness to cold, and yet the patient desires to go into the cold air as it brings relief.

Rhus tox.:—When this remedy is indicated there is usually a history of rheumatism, the symptoms being relieved by motion. There may be a slight aggravation on first moving, but continuous motion brings relief. The patient is worse from damp air, from getting wet, and relieved by warmth. There is anguish and anxious sadness, worse at night; the sleep is disturbed by anxious dreams. There are shooting, lancinating pains in the chest, worse while sitting, but seldom while exercising. There is a sensation of weakness and trembling referred to the heart. While sitting quietly there is violent palpitation, with shooting

pains in the region of the heart and with a painful sensation of paralysis and numbness in the left arm.

Nux vomica:—This remedy is to be studied when the patient is irritable and sensitive to everything. There is chilliness, with a sour smelling breath, constipation and an early morning awakening, (3 A. M.) and falling asleep just when he should get up. There are shooting pains in the region of the heart; with palpitation which is worse after dinner and while lying down; with heaviness of the chest and an inclination to vomit. There are also symptoms of asthma and constriction with oppression in the chest, which is worse during the night and when going up an ascent.

Aconite:—This remedy is not called for in this connection frequently, but at times it will be, where there is great restlessness, with anxiety and fear of death. There are stitch-like pains with hacking cough and hemoptysis. The patient is aroused from sleep, being in great distress. The face is red and a physical examination reveals a congestion of the lungs.

Adonis vernalis:—This remedy will be found of service when dilatation of the heart is taking place, as indicated by the diminished heart's action and the lowering of the blood pressure generally; as a result, the function of the kidney is lessened and marked dropsy appears.

Baryta carb.:—This remedy should be studied carefully, as clinically it has produced marked action upon the circulatory system. There are indications of degenerative changes in the arteries, especially in the aged and those who are childish, have a a weak memory and an imbecile condition.

Belladonna: — While acting upon others, this remedy affects most favorably those of a plethoric constitution, who have blue eyes, light hair, fine complexion and a face that is apt to be red and bloated. There is violent beating of the heart that can be felt in the head and chest; respirations are short, anxious and rapid.

Sulphur:—The sulphur patient is of a scrofulous diathesis; nervous temperament; quick in motion and temper; is sensitive to atmospheric changes, is subject to venous congestions. His complaints, whatever they may be, are continually relapsing and the carefully selected remedy fails to produce the desired effect. There are shooting pains in the region of the heart with palpitation, which may be visible; it is attended with anxiety and aggravated by going up an ascent. There is a sensation of pressure in the cardiac region, as though the heart had not room. The symptoms are all aggravated at 10 to 12 A. M., when there is a sensation of sinking. Water and warmth also aggravates. There is a tendency to religious and philosophical reveries, and often a history of suppressed eruptions and discharges.

Stigmata maidis: — In cases where the dropsy has become severe, this remedy will be found most serviceable. It renders the heart's action slower and stronger, it becomes of a better rythm, the arterial tension is increased, and the venous tension reduced. Other remedies that may be of service in dropsy are, apocynum cann., eupatorium purp., iberis amara., copaiba and arsenicum.

Lithium carbonicum:— This remedy has been of service to those whose hearts are suffering from the

effects of rheumatism or gout. The symptoms that have guided its selection have been, the great soreness and tenderness about the heart; which at times, is attended with shocks and jerks of the heart. There is a general soreness and distress, with pressure in the region of the heart, that is relieved by urinating. The urine is scanty and dark, with uric acid deposits. A headache is complained of, which is relieved while eating.

Spongia tosta:—This remedy is frequently useful in organic diseases of the heart, when the patient is unable to lie with the head low; if he does, it brings on an attack of dyspnea and suffocation. There is violent palpitation of the heart with pain. Frequently the patient is aroused from sleep as if smothering, sits up in bed with flushed face and rapid, hard breathing.

Kali muriaticum:—This remedy should be studied in the exudating stage of inflammation. When it is indicated there is a white or gray coating at the base of the tongue. There is a sense of constriction of the chest with palpitation; there is perceptible, but not accelerated beating of the heart. The pulse may be accelerated or quiet and sluggish.

Ferrum phos.:—This remedy is to be thought of in the first stage of any inflammatory process, before the exudation has taken place. The pulse is soft, full and quick. There is thirst, fever and sweat which does not relieve the pain. The patient is anemic, and all the pains are aggravated by motion and relieved by cold.

Calcarea carbonica: —This remedy corresponds to many forms of rheumatism and is frequently of

service when the heart is involved. The patient lives in dread of heart disease and consumption; is ill-humored and obstinate. There is a tendency to obesity or emaciation, with chilliness in the open air. There is coldness of the extremities which are covered with a clammy perspiration, also cold sweats about the head and chest. There is hunger soon after eating, with acidity and heart-burn. In the female the menses are too early and too profuse. There is shortness of breath on ascending, with wheezing respiration, anxious oppression and palpitation of the heart. This remedy is frequently of service in bringing the whole system up to a healthier state and in this way assists in maintaining a compensation.

Cimifuga racemosa:—This remedy will assist in removing from the system the rheumatic poison and thus enable the heart to regain its equilibrium. There is excessive muscular soreness, with pains in the neck, with restlessness, twitching, trembling and mental gloom. Severe pain is present in the left chest below the fifth or sixth ribs. The pain extends from the region of the heart, all over the chest and down the left arm, which feels numb as if bound to the side. There is palpitation of the heart with cerebral congestion, a livid face, dyspnea, cold perspiration on the head, and numbness of the body. The heart's action ceases suddenly with a sensation of impending suffocation.

Natrum mur.:—This remedy has frequently been of service in the management of valvular disease. The patient is sad and melancholy with an inclination to weep, and is aggravated by con-

solation. The symptoms are all worse from lying down, especially at night. The sleep is disturbed by dreams. There is a violent palpitation of the heart that is attended with anxiety, is worse from every movement of the body and while lying on the left side. The palpitation is irregular, intermittent and jerking in character, and is accompanied with jerking pains in the region of the heart.

In cases where the compensation is rapidly failing the following remedies will be found the best to check the process: Digitalis, strophanthus, caffeine and strychnine.

The caffeine may be given hypodermically; a solution, prepared of one drachm caffeine and one drachm of salicylate of sodium, to two drachms of distilled water, of which 10 or 15 drops are injected as required.

Strychnia will be found of great service at a later period than digitalis, when doses from one-hundredth to one-twentieth of a grain will be serviceable.

CHAPTER XV.

AORTIC INCOMPETENCY.

Definition:—The aortic valves close imperfectly, allowing a portion of the blood to pass back into the ventricle during its diastole. It is most frequently associated with aortic disturbance.

Etiology:—This lesion is most frequently met with in strong, vigorous individuals during the active period of life, whose work calls for prolonged physical endurance; this with alcoholism and syphilis forms a trio which gives rise to an induration, thickening and contraction of the cusps, known as fibrotic endocarditis; which is the most frequent cause of aortic incompetency. Acute rheumatic endocarditis is not as frequent a cause here as at the mitral orifice; but when at this valve, it is usually of the ulcerative variety and is rapidly fatal. Locomotor ataxia and endarteritis obliterans are occasional causes. Extremes of temperature and all those conditions that have a tendency to develop fatty degeneration, sclerosis, or a gouty diathesis have their influence. This is the orifice that suffers most frequently from traumatism; the left posterior cusp being the one most often ruptured during the heart's diastole. Among the occasional causes are congenital malformation, vegetations obstructing the closure of the orifice, atheroma of the aorta and aneurysmal dilatation of the commencement of the aorta.

Pathology:—The changes are found either in the cusps or in a dilatation of the aortic orifice; when in the cusps, it is due to a shortening,

thickening and puckering; the result of chronic endocarditis or fibrotic changes that have extended from the aorta. Adhesion of the valves to the walls of the aorta takes place; also rupture of the valve. In acute endocarditis, vegetations may appear on the cusps, which frequently terminate in ulceration and loss of substance; at times, it produces fusion of the cusps and narrowing of the orifice. With these changes, patches of sclerosis, atheroma and calcification of the aorta are often present.

The coronary arteries are ultimately involved in the fibrotic change, which by constricting their orifice, limits the blood supply to the cardiac walls and affects its nutrition. In a normal condition, the recoil of the aorta by pressing the blood against the perfectly closed aortic valve, becomes the main force in filling the coronary arteries; but, in incompetency of this valve, the aorta is unable to perform this part of its function, and as a result the arteries are not filled, and there exists a second cause leading to degeneration of the myocardium.

The effects of incompetency are felt first by the left ventricle, surcharging it with blood, and giving it an increase of work; as a result it becomes hypertrophied, and the cavity dilated. So long as the coronary arteries are in a healthy condition and the blood of such a character as to maintain the necessary metabolism of the myocardium, the hypertrophy is such as compensates and maintains an equilibrium; but should the heart outgrow the possibilities of the coronary arteries, degenerative changes take place, which lead to dilatation and

cardiac failure. In some cases, owing to the great stress, the mitral valve becomes incompetent, allowing regurgitation of the blood into the left auricle, the pulmonary veins and lung tissue; giving rise to a passive hyperemia that ultimately affects the right side of the heart. The great variation in the arterial blood pressure leads to far reaching effects in the nutritive processes.

Symptoms:—So long as compensation is perfect there may be nothing to warn the victim of danger. But the rupture of the valve due to strain or traumatism may give rise to severe pain and dyspnea, with disturbance of the circulation.

Cardiac pain is one of the most common symptoms of this disease; it varies from an uneasiness to the most profound agony. Headache and throbbing about the head are often present on exertion. Subjective symptoms of the eyes are complained of. Pallor of the surface is often noticed. The capillary pulse is observed as well as the excessive pulsation of all the arteries. There is present what is known as the "water hammer," or Corrigan's pulse. It is abrupt, large, of short duration and falling away from the finger the instant it reaches it. Sphygmographic tracing brings out some of the points distinctly. The ascent of the curve is abrupt, steep and high; the descent almost as swift; there may be considerable tidal wave but the dicrotic notch and wave are slightly marked. Occasionally, a venous pulse of the peripheral veins is developed. It appears as a wave passing from the periphery towards the centre, following the ventricular systole, and when

present, is seen best in the veins of the back of the hand.

Inspection:—This may reveal but little that is abnormal, but more frequently, the face is pale; the area of the apex beat is enlarged extending to the mid axillary line, at times its force is increased. The carotid pulsation can be seen to the angle of the jaw.

Palpation:—Shows an increased force to both the cardiac systole and diastolic recoil; also the definite location of the apex beat. When the hand is placed over the aortic area a diastolic thrill may be felt; but a systolic thrill is usually felt over the carotids and subclavian arteries.

Percussion:—The area of cardiac dullness is increased both in the vertical and horizontal direction. The left border shows a greater extension to the left and downward than does the right side in the opposite direction.

Auscultation:—Reveals the characteristic diastolic murmur, with or obscuring the second sound, the character of which varies from the soft blowing to the harsh, rasping quality; and at times, it produces a musical sound. The location of the maximum intensity of this murmur varies, but it is most frequent at the right of the sternum, or at the level of the second costal cartilage; but may be to the left of the sternum or even at the apex. It is conveyed downward toward the apex.

Diagnosis:—This is based on the peculiar character of the radial pulse, capillary pulsation, the condition of the arteries in general, the left ventricle and the diastolic murmur heard to the right of the sternum.

Prognosis:—This is the cardiac disease in which the life of the patient hangs on a thread. The cause and nature of the disease; whether other valves are involved or not; the condition of the arterial walls; the kidneys and general condition of nutrition must be taken into account. The cases that result from endocarditis are more favorable than those from degeneration with anginal seizures; as the coronary arteries are frequently involved in the latter. If the hypertrophy compensates fully for the lesion; if the second sound is distinct in the cervical arteries and the arterial tension good, the indications are hopeful. If the cardiac contractions are enfeebled, the sounds weakened, the arterial tension lowered, the indications are unfavorable.

Treatment:—So long as compensation is perfect, no treatment, apart from the general rules to be observed in all lesions where hypertrophy is marked, is demanded. All fatigue whether muscular or mental is to be avoided. The diet should be carefully regulated, all alcohol and tobacco stopped, and a high physiological condition maintained. The patient should receive a most careful examination from all standpoints and be treated accordingly. As compensation begins to fail, absolute rest in bed for three or four weeks is often of service. When this is not practical, all the emotions should be under control and a quiet life in the country is to be chosen. Straining, of all forms, should be avoided, and especially that demanding the use of the hands above the head. The nutrition should be as high as possible, that the heart muscle may not suffer. Nitrog-

enous food is to be preferred to sugar, sweets, vegetable and animal fat. The patient should sleep with as little under the head as possible, and thus relieve both the cardiac circulation and the tendency to pulmonary congestion. The bowels should move at least once a day. The body should be warmly clad, and exposure to cold should be avoided. Warm baths often benefit these cases.

For the indications of the following remedies and others that may be called for, the reader is referred to the Therapeutics of Chronic Endocarditis: Iodide of arsenic, aurum, cactus, convallaria, baryta carb., belladonna, aconite.

CHAPTER XVI.

AORTIC STENOSIS.

Definition:—This is a defect of the aortic valve that interferes with the passage of the blood from the left ventricle into the aorta.

Etiology:—Aortic stenosis is most frequently found in middle and advanced life, but may occur at any age; more men are affected than women. It is noted among those whose avocation calls for prolonged physical labor. Acute, sub-acute and chronic endocarditis are all responsible for some cases, but the latter is the most frequent cause.

Pathology:—The point of obstruction varies, it may be at the origin of the arterial channel, or any part of the arterial aspect of the cusps; or it may result from vegetations, some of which are small while others are large, and undergo a calcareous degeneration. At times there is a thickening and retraction, with degeneration and calcification of the cusps; occasionally, they become attached to each other and give rise to a contracted funnel-shaped aperture, the apex of which projects into the aorta. The wall of the left ventricle becomes hypertrophied; dilatation follows and in time, incompetency of the mitral valve, which causes a hypertrophy and dilatation of the left auricle; while later a passive hyperemia of the lungs and changes in the right side of the heart result. The aorta is frequently diseased, there being sclerotic changes and dilatation, which give rise to irregular bulging on the concave side of the vessel. If sclerotic changes are present in the aorta, one or

both of the coronary arteries are apt to be involved, leading to their occlusion and degeneration of the myocardium.

Symptoms:—So long as compensation is sufficient no subjective symptoms are complained of. Pain is often present and presents many of the symptoms of angina pectoris. Dyspnea with palpitation is often present. The aspect of the patient is but little changed, apart from a tendency to pallor which may be slight. The complexion may be modified by general conditions that accompany the aortic lesion.

There are two conditions giving rise to these symptoms; in one, the orifice is narrowed; in the other, the orifice is normal but there is a dilatation of the aorta, just beyond the orifice, that produces symptoms in many particulars similar.

Inspection:—This may show a bulging of the precordia if there was an enlargement of the heart during childhood; sometimes a distinct pulsation in the third, fourth and fifth intercostal spaces on the left side. The apex beat is displaced downward to the left. The arteries show but little if any pulsation.

Palpation:—The pulse is regular, tardy and sustained. The apex beat is found to be downward, and to the left; it is usually strong, sustained and at times accompanied by a systolic thrill; which as a rule, is confined to the aortic area and adjacent parts, but may be conducted over the whole chest.

Percussion:—Shows the area of cardiac dullness to be increased downward and to the left.

Auscultation:— Reveals a systolic murmur synchronous with the apex beat; although its duration may vary, it usually continues well into the second sound. The character of the murmur may be soft and blowing, or harsh and rasping, again it may be musical. The point of maximum intensity of the murmur is usually about the middle or upper part of the manubrium, but may vary. The murmur is propagated to the summit of the sternum and outward along the clavicle, as well as down the sternum. It may be heard in the carotids, in the subclavians, down the arms and even in the femoral arteries. In a fair proportion of cases the murmur is heard to the left of the sternum, when all the symptoms connected with the case must be taken into consideration; to differentiate it from murmurs due to pulmonary stenosis. Contrary to what might be expected, the aortic second sound is usually increased in loudness. The first mitral sound is increased in intensity and the tone lowered. When dilatation of the ventricle has occurred, it may be replaced by a murmur.

Diagnosis:—The most positive sign is the systolic murmur carried into the vessel of the neck and extremities. The pulse varies to such an extent that it cannot be relied upon. There may be absence of a thrill from the base of the heart, and hypertrophy may be marked.

It must be differentiated from a mediastinal tumor pressing upon the aorta; an aneurysmal dilatation of the ascending aorta; and a patent ductus arteriosus. Tumors within the mediastinum that cause stenosis of the aorta, are usually from the thymus gland, mediastinal connective tissue,

parietal pericardium, or periosteum of the thoracic walls. At times these growths, while pressing upon the aorta, give rise to symptoms simulating aneurysm. In other cases the pressure produces a systolic murmur heard over the manubrium, which is conveyed along the arteries; there is present an area of dullness on percussion, which is sufficient to differentiate it from disease of the aortic valve. In this class of cases no changes are found in the arterial system in general and no accentuation of the second aortic sound.

The only form of aneurysmal dilatation that might be mistaken for an aortic obstruction is the fusiform variety. But in this the area of dullness extends farther to the right at the second and third costal cartilage. Auscultation gives two signs of simple aortic dilatation; first a soft, blowing systolic murmur, produced by eddies, which take their origin within the dilated aorta; the murmer being carried along the vessels of the neck; the second symptom is an accentuation of the second aortic sound. It should be remembered that arterial sclerosis, especially when accompanied with cirrhotic changes in the kidney, produces this same symptom.

Pulmonary obstruction may be mistaken for aortic obstruction, especially when the murmur of the latter is heard to the left of the sternum, but in pulmonary obstruction the murmur is never conveyed to the arteries of the neck. A patent ductus arteriosus is congenital, it is characterized by a loud systolic murmur, which may be carried beyond the second sound, its greatest intensity is in the second left intercostal space, about one inch

and a half from the middle of the sternum. The murmur may be propagated through the whole body, but never to the vessels of the neck and arms.

Prognosis:—This is more favorable in aortic obstruction than in any other organic valvular lesion; not having the tendency to sudden death by aortic incompetence. It may, however, interfere with the coronary arteries.

Treatment:—Should the origin of this lesion be a sclerotic process, a careful regulation of habits, food, drink, rest and exercise is demanded. The food should be highly nitrogenous and plenty of fluid taken. Exercise should be well regulated, but any physical or mental stress removed.

When cardiac failure ensues, as it will sooner or later, the treatment must be conducted on general principles.

For the indications of the following remedies and others that may be called for, the reader is referred to the Therapeutics of Chronic Endocarditis: Arsenicum, cactus, nux vom., phosphorus, antimonium tart.

AORTIC STENOSIS AND REGURGITATION.

A combination of these lesions are more frequently met with than one alone; many cases that pass for aortic incompetence, upon a more careful examination, are found to be a combination of these two.

Etiology:—The causes producing these lesions are the same as those producing the single lesion; the same remark holds true of the morbid anatomy. There is, in all cases, a thickening and

roughness of the cusps, together with a deformity and retraction that prevents their proper closure.

Symptoms:—These are the combined effects of the two lesions, with the symptoms of the most marked in the ascendency. The apex beat is displaced downward and outward, and a thrill both systolic and diastolic may be present. The area of cardiac dullness is increased and both systolic and diastolic murmurs heard.

Prognosis:—The combination while more serious than a stenosis, is not much more serious than an incompetence alone.

The treatment is that of aortic incompetence.

CHAPTER XVII.

MITRAL INCOMPETENCY.

Definition:—This is an imperfect closure of the mitral valve that allows the blood to regurgitate into the left auricle.

Etiology:—Of the causes of mitral incompetency, acute rheumatic endocarditis is the most fruitful. Febrile states, wasting diseases, anemia and diseases that produce a degeneration of the myocardium have been causes at times. A simple dilatation of the auriculo-ventricular ring, or disease of the chordæ tendineæ, allowing the cusps to pass backward into the auricles; are responsible for the incompetency in some cases.

Pathology:—In many of these cases, obstruction is associated with the incompetency. When endocarditis is the cause, the cusps are rigid, contracted, and there is often fusion of their margins, and vegetations. At times the auriculo-ventricular ring is dilated, due to relaxation of the muscular structure surrounding the orifice. Of the changes in the walls of the heart, the left auricle will be found dilated and hypertrophied, the latter being the more marked if the regurgitation is not pronounced. The ventricle also shows dilatation and hypertrophy.

Symptoms:—So long as the compensation is full, there may be no symptom. But as soon as the compensation begins to fail, there is a sensation of uneasiness or weight about the precordia. Breathlessness appears and a cough that is attended by a watery sputum. This, above all others, is the heart lesion that gives rise to headache, illusions,

delusion and hallucination, with a sensation of faintness and giddiness. A slight degree of jaundice is common, the eyes are congested, the lips and nostrils are cyanotic and there is a dusky flush on the cheeks. The pulse has a reduced pressure.

Inspection:—The apex beat is usually downward and outward. The impulse at times is diffused.

Palpation:— A simple, mitral incompetence is never accompanied by a thrill. The apex is displaced to the left. When hypertrophy predominates, the apex beat is downward and to the left. When dilatation predominates, it is outward and up, and is more diffused.

Percussion:— No other valvular lesion produces such an increase in cardiac dullness as this one. It is increased laterally and downward.

Auscultation:—Reveals a systolic murmur which accompanies or replaces the first sound, having its point of maximum intensity at the apex. It is projected in all directions, but especially toward the axilla and scapula. The character of the murmur varies, usually it is soft and blowing but it may be harsh and rasping. At times it is heard as distinctly at a point between the left scapula and vertebral column, as it is at the apex of the heart. The second pulmonic sound may be accentuated or doubled.

Diagnosis:—This is usually easy, but it is not easy to say whether it is due to a valvular lesion or muscular incompetence. The broad area of cardiac dullness; the systolic murmur, heard best at the apex, and conveyed to the left axilla, also to

the back at times; with an accentuation of the second pulmonic sound are characteristic.

Prognosis:—If the incompetence is of slight degree it may exist for years without any interference with the health. If the general health is good and no pulmonary symptoms appear, the absence of venous stasis, the freedom of the right side of the heart from implications and an energetic cardiac impulse, are all favorable conditions. When it appears early in life, it interferes with the process of development and leads to disturbance of the general nutrition.

Treatment:—This varies according to the stage at which the case comes under observation. If compensation be perfect, there is but little to be done apart from a careful attention to the nutrition, that full compensation be maintained. When compensation is failing, absolute rest is to be insisted upon, and the general treatment should be based upon the effects that the lesion has upon the right side of the heart and lungs.

The circulation of the blood through the lungs should be favored as far as possible, that the blood may be aerated.

For the indications of the following remedies and others that may be called for, the reader is referred to the Therapeutics of Chronic Endocarditis: Digitalis, naja, lycopus, crataegus, kalmia, cactus, strophanthus, adonis vernalis.

CHAPTER XVIII.

MITRAL STENOSIS.

Definition:—This is a narrowing of the mitral valve, that interferes with the current of blood passing from the left auricle to the left ventricle.

Etiology:—This is an affection of early life that is seen more frequently in women than men. It is, at times, congenital. Endocarditis,—the result of rheumatism, chorea and chlorosis, is the most frequent cause.

Pathology:—The changes are located either on the cusps or at the auriculo-ventricular ring; when at the latter, they consist of either vegetations or a sclerotic process, or a combination of these two. In the greater proportion of cases, the changes are confined to the cusps and chordæ tendineæ. There may be adhesions of the edges of the cusps, giving rise to constriction of the orifice; or on account of the involving of the chordæ tendineæ the cusps do not act properly. At times, vegetations are found upon the auricular side of the valve; again, the changes are purely sclerotic. On account of its extra work the left auricle becomes hypertrophied, but as cardiac failure takes place, dilatation results. The left ventricle is hypertrophied as a result of the extra diastolic aspiration demanded, and there is a general venous stasis. In due time the right ventricle shows the effect of the deranged circulation, by becoming hypertrophied and later dilated. The lungs give evidence of venous stasis. As the compensation fails, edema and hydrothorax appear.

Symptoms:—While compensation is full there is usually no symptom to indicate the presence of this lesion, apart from a dyspnea which appears under muscular effort. A little later the blood gives evidence of not being aerated, a broncho pneumonia may develop, or a cough with expectoration of a fluid sputum that may contain blood, and pulmonary hemorrhage may take place. Pain at the apex and over the anterior chest wall, while not constant, appears in some cases and may extend to the left shoulder and arm. As the failure of compensation becomes more marked, the dyspnea becomes more constant, the congestion and edema of the lungs, with blood-stained and serous expectoration more pronounced; and recurrent febrile attacks, due to endocarditis, are to be expected. And while ascites and congestion is the rule, general anasarca is rare.

Inspection:—The apex beat may be seen to the left and downward, but usually it is nearly normal. The increased tension in the pulmonary artery may give a pulsation in the second left intercostal space, and epigastric pulsation may be noted.

Palpation:—At first the pulse is regular, but later it becomes irregular in force and rythm. The hand over the precordial region reveals a thrill at the apex, which is presystolic or diastolic in rythm.

Percussion:—The line of dullness is extended outward, along the third and fourth left intercostal space. If the right auricle is enlarged there is dullness extending to the right.

Auscultation:—This gives the pathognomic sign of mitral stenosis, a presystolic murmur heard best

just above and one inch within the apex beat. It is rough and vibratory. It is heard up to the first sound, which is sharp and short. The pulmonic sound is accentuated, and the second sound at the base of the heart may be doubled.

Diagnosis:—This is based on the presystolic thrill and murmur heard near the apex; the character of the pulmonic second sound and the increased size of the heart.

Prognosis:—This is second to aortic regurgitation only, in point of gravity. By care the patient may live for some time. But there must be no fatigue, physical or psychical, that would produce a break-down.

Treatment:—The first object should be to obviate the tendency to pulmonary disturbance, as the pulmonary veins are the first to suffer. To accomplish this, the clothing and general care should be such as will protect the patient from sudden changes of the temperature. If pulmonary complications appear, it is advisable to confine the patient to a well ventilated apartment where there is an equal temperature, and if thought best, steam may be employed.

For the indications of the following remedies and others that may be called for, the reader is referred to the Therapeutics of Chronic Endocarditis: Convallaria, lycopus, naja.

MITRAL OBSTRUCTION AND REGURGITATION.

A combination of these two lesions is more frequently met with than either of the lesions alone.

Etiology and Pathology: — These lesions are always due to organic disease, either in the form of

endocardiac changes or degenerative processes. Of the two, the former is more frequently met with; but in the aged, the latter is frequently met with as the cause. The changes present in this condition are, the development of vegetations upon the cusps which interfere with the blood current and a proper closure of the valves, so that both obstruction and incompetence are present. In other cases there is thickening and roughening of the valves, while the tendinous cords are more resistant than in health, and as a result, there is the combined lesion. In another class of cases, there is fusion of the cusps to such an extent that a mere slit of small dimensions results. The effects of the combined lesions are greater than of either alone. The auricle is greatly dilatated and hypertrophied in some cases. The pulmonary circulation, the right side of the heart and systemic veins suffer as a result.

Symptoms:—While the symptoms are those of combined lesions, they are more pronounced than of either lesion alone. For the symptoms presented by the separate lesions, the reader is referred to the article treating of it. With a greater disturbance, the symptoms of both the pulmonary and systemic circulation are more pronounced, as well as the pulmonary hyperemia, edema of the dependent parts and catarrhal conditions of the mucous membranes. The pulse becomes irregular at an earlier date. Pulsation of the cervical veins, and epigastric pulsation are frequently observed.

Percussion:—Outlines an enlarged heart; and auscultation gives the combined murmurs. The systolic mitral murmur may be all that is detected. The first sound may be roughed in character and

may sound like the "b" of the word "rub." The second pulmonic sound is accentuated to a more marked degree than when but one of the lesions is present.

Diagnosis:—The irregularity of the heart's pulsations, with the roughened first sound passing into a systolic murmur and followed by an accentuation of the pulmonic second sound, are considered characteristic of the double lesion.

Prognosis: — With the combined lesions the prognosis is worse than for either lesion alone. While not attended with the pain that is characteristic of aortic disease, yet this lesion gives rise to a continued distress.

Treatment: — This is practically that of the the single lesions, but must be carried out faithfully.

CHAPTER XIX.

PULMONARY INCOMPETENCE.

Definition:—This is a defect of the pulmonary valve which allows the blood to regurgitate into the right ventricle during its diastole.

Etiology:—It is an affection of early life and is rare. It is frequently congenital; in which case, it is associated with pulmonary stenosis. Of those cases that are developed during life, rheumatism and the eruptive fevers are the most frequent causes. Degenerative changes, as sclerosis and atheroma, due to alcoholism have been noted as causes later in life.

Pathology:—Those cases that develop during life are the results of endocarditis or degeneration. The cusps are shrunken, thickened, indurated and distorted. At times they are ulcerated and may be perforated. The effects on the heart are, hypertrophy and dilatation of the right ventricle, and at times, of the auricle. It should be remembered that a functional incompetence is present at this orifice at times.

Symptoms:—Dyspnea and cyanosis are noticed on exertion and do not cause any annoyance during repose; as cardiac failure appears, these symptoms become continuous and are then attended with a cough and lung difficulties. On account of the dilatation of the right ventricle and regurgitation of the tricuspid orifice, venous stasis, with enlargement of the abdominal organs follow; with catarrh of the mucous surfaces and effusion into the serous

sacs. Clubbing of the fingers and arching of the nails are frequently seen.

Inspection:—Shows the apex beat displaced to the left, a distinct pulsation in the epigastrium and a distended condition of the veins of the neck which have a pulsation at times.

Palpation:—Confirms inspection, and may reveal a thrill heard over the base of the heart, with its greatest intensity to the left of the sternum, synchronous with the second sound.

Percussion:—Shows the area of cardiac dullness extended both to the right and left.

Auscultation:—A diastolic murmur is heard replacing the second pulmonic sound, which has its greatest intensity at the second left intercostal space. It may be rasping or soft and blowing in character, and increased during expiration, it is not transmitted to the cervical vessels.

Diagnosis:—It must be remembered that the murmur of aortic incompetence may also be heard to the left of the sternum. But a diastolic pulmonary murmur is not conveyed to the carotids, as is a similar murmur of the aortic orifice; neither is it attended with Corrigan's pulse, capillary pulsation, nor heard distinctly at the apex; while cyanosis, dyspnea and clubbing of the fingers are characteristic of pulmonary incompetency. A patent ductus arteriosus presents the dyspnea and cyanosis, but in this, the murmur and thrill are of late systolic rythm.

Prognosis:—This is grave. Bronchitis and broncho-pneumonia are common in adults, and whooping cough in children, are always rendered

more serious by its presence. Pulmonary tuberculosis is also a frequent complication.

Treatment:—Embraces those prophylaxis that prevent bronchial affections, which are such fatal complications. Attention should be given the protection of the body, the air breathed, ventilation and the general treatment for cardiac failure.

See Therapeutics of Chronic Endocarditis.

PULMONARY STENOSIS.

Definition:—This is a diseased condition of the pulmonary valve that interferes with the systolic current of blood from the right ventricle.

Etiology:—It is the most frequent of all the congenital heart lesions, and the most rare of those developed during extra uterine life. Of those cases that develop after birth, endocarditis from rheumatism, the eruptive fevers and specific infection are the most frequent causes. It is frequently found associated with the disease of the left side of the heart.

Pathology:—This may be confined to the cusps, which are thickened, indurated, rigid, and at times show calcareous deposits; or are bound together by adhesions. At times the obstruction is lower down, when it is in the form of a ventricular endocarditis. Again, the obstruction results from endocarditis of the pulmonary artery or from aneurysm or enlarged bronchial glands pressing on the pulmonary artery. If the condition has prevailed for some time, it is accompanied by hypertrophy of the right ventricle, tricuspid incompetence and dilatation of the right auricle.

Symptoms:—There are no constant subjective symptoms. In those cases that are congenital, cyanosis is often present; but in other cases it is not marked; the eyes are often prominent; the lips thick; fingers clubbed and superficial feeling congested.

Inspection:—This does not reveal any sign that is constant.

Palpation:—A distinct systolic thrill may be felt over a considerable part of the precordia.

Percussion: — This may outline an enlarged heart transversely.

Auscultation: — Reveals a systolic murmur at the base of the heart, its greatest intensity being in the second left intercostal space, close to the sternum. It is superficial, limited in its diffusion and not transmitted to the vessels of the neck.

Diagnosis:—This to a great extent is by exclusion. The murmur is not conveyed to the vessels of the neck, as it is in disease of the aortic orifice; neither has it the characteristic pulse, nor the hypertrophy of the left ventricle. When its form is congenital it is attended by clubbing of the fingers. It is practically impossible to distinguish, by the murmur produced, this lesion from the pressure on the pulmonary artery or aneurysm of the sinus of valsalva.

Prognosis: — This is not good; most of these cases die young. Many of them develop pulmonary tuberculosis.

Treatment: — This embraces the care of the lungs, and the prevention of pulmonary tuberculosis.

See Therapeutics of Chronic Endocarditis.

CHAPTER XX.

TRICUSPID INCOMPETENCY.

Definition: — This is a diseased condition of the tricuspid valve that allows the blood to pass back into the right auricle during cardiac systole.

Etiology:—It is met with more frequently than any other valvular affection; and is so common that it is looked upon as a physiological provision for the relief of the over-distended right ventricle. There is no doubt that here, as at the other orifice, acute, sub-acute and chronic endocarditis give rise to incompetency. Muscular changes that allow of dilatation of the right ventricle, or obstruction of the pulmonary orifice that results in much the same condition, also favor it. Emphysema and fibroid changes in the lungs, and the remote effects of chronic bronchitis, as well as mitral lesions, by interfering with the natural currents of the blood; also favor its development; as do disease of the kidneys, pyrexia, toxic influence and malnutrition.

Pathology: — In many of these cases there is thickening and induration of the cusps, which may undergo a fibrinous or calcareous degeneration, while early in life vegetations develop on the cusps. In a larger percentage of cases, the valves do not show any change, but there is dilatation of the orifice. The right auricle is often dilated to a great extent, its walls being thinned. The dilatation is not confined to the auricle, but both the superior and inferior vena cava also show it. Those veins that are tributary to the inferior vena cava, having no valves, suffer most; as a result, the

liver is enlarged and a nutmeg liver may result. The spleen is enlarged; there is congestion of the stomach; hemorrhoids; a general venous stasis; sub-cutaneous edema and mucous catarrh.

Symptoms:—The symptoms are such as result from a passive congestion of the lungs and a distension of the venous system; as indicated by the dyspnea, palpitation, headache, vertigo, dizziness and gastric disturbance which are often severe. The skin is inclined to be jaundiced. The kidneys secrete but little urine and that is high colored. Constipation is often present, and dropsy, with or without ascites.

Inspection:—The most marked symptom, and one that is considered pathognomonic, is venous pulsation. This is seen in the jugular veins when the patient is reclining. There is also a general venous congestion. The veins fill by jets that correspond to the heart beat. If a vein is emptied by passing a finger along its course from the centre towards the periphery it will be seen that the venous blood is forced along behind the finger, refilling the vein. Undulation of the epigastrium due to the enlarged right ventricle is present.

Palpation:—This confirms inspection, and by having the patient lie on the back with the arms raised; placing one hand over the right middle axillary region and the other over the upper abdomen, the pulsation of the hepatic veins may be detected.

Percussion: — This shows the heart to be enlarged to the right, with increased hepatic dullness.

Auscultation:—There may be no murmur present. The murmur when present, is systolic in

rythm, of a soft, blowing character and heard with the greatest intensity at the junction of the fifth and sixth left intercostal cartilage with the sternum.

Diagnosis:—The most positive signs of tricuspid incompetence are, an acutal venous pulse and pulsation of the liver; and other points are, the extension of the cardiac dullness to the right and the systolic murmur over the tricuspid valve.

Prognosis: — This is dependent on the cause of the disease. In those cases where it is dependent upon some disorder of the myocardium, or temporary interference with the lungs; that are removable, it is good. It is markedly otherwise when it is the result of disease of the left side of the heart.

Treatment: — When the disease results from valvular, pulmonary or myocardial disease it must be corrected. If due to faulty digestion this must be removed.

See Therapeutics of Chronic Endocarditis.

TRICUSPID STENOSIS.

Definition:—This is a diseased condition of the tricuspid valve, interfering with the current of blood passing from the right auricle to the right ventricle.

Etiology: — Tricuspid stenosis, as an isolated lesion, is very rare, being most frequently associated with mitral stenosis. It may be congenital or acquired; and has been recognized oftener in women than in men. When congenital, a defect of the septum ventriculorum is often present; while in acquired cases, there is usually a history of rheumatism or chorea.

Pathology:—The changes here are similar to

those found at the left orifice. There may be a union of the cusps that results in a funnel shape of the orifice. There is at the same time a degree of contraction and rigidity of the cusps, with a deposit of inorganic salts. Dilatation, with a degree of hypertrophy, is present in the left auricle, and venous stasis is noticed.

Symptoms: — The subjective symptoms are not pronounced. Dyspnea is at times marked and is associated with chilliness of the extremities and susceptibility to cold. Cyanosis and cardiac palpitation is present in a varying degree. The complexion is dusky; the lips, nostrils and ears are dark. The distended condition of the veins indicate venous stasis and edema appears sooner or later. The urine is scanty, high colored and contains albumen.

Inspection:—Shows a distended condition of the jugular veins with little or no pulsation; if pulsation is present it is presystolic.

Palpation: — This may not reveal anything of a diagnostic value, but a presystolic thrill may be felt over the right auricle.

Percussion: — May outline an enlarged right auricle.

Auscultation:—When it can be recognized, there is a presystolic murmur, having its maximum intensity over the tricuspid area (beneath the sternum at the level of the fourth rib). In many cases no murmur is detected and when present, it will be found difficult to differentiate this from mitral stenosis, with which it is associated in about 80 per cent of the cases.

Diagnosis:—It should be remembered that the secondary symptoms of mitral stenosis simulate those of tricuspid stenosis. But the presystolic murmur in tricuspid stenosis has its maximum intensity over the tricuspid area.

Prognosis:—This depends on the extent to which other parts of the heart are implicated.

Treatment: — As this lesion diminishes the amount of blood passing to the lung, and also, by retarding the venous blood which results in stasis; care must be taken of these parts to favor their function as far as possible.

See Therapeutics of Chronic Endocarditis.

CHAPTER XXI.

CARDIAC THROMBOSIS.

This is an ante mortem coagula within the heart, which may develop rapidly or slowly. The former is termed heart clots or thrombi; the latter, from the fibrinous deposits that take place, is called cardiac polypi.

Etiology:—In the majority of cases there has been some cause at work, weakening the heart's action, and as a result the blood current is retarded; associated with this is some obstruction to the blood current, as is seen in pneumonia. These conditions may be brought about by the various degenerations of the myocardium or changes in the endocardium, as erosions and ulcerations, when associated with a toxic condition of the blood. Cardiac aneurysms and valvular aneurysms, valvular stenosis, especially of the mitral valve, are occasional causes.

Pathology:—The distinction between ante mortem and post mortem, or immediate ante mortem clots should be clear to everyone making autopsies. Recent clots may have the color of the blood; but more frequently they have but little of the coloring matter of the blood, and are a straw color, may be translucent, soft and gelatinous. When lifted from their seat they are easily detached without any rupture, although they are friable. True cardiac thrombi are formed by a gradual deposit of fibrin on some roughened point where the blood is retained, as in the apex of the ventricles. The thrombi are of a dull, grayish

white color and are firmly attached to the cardiac wall; either by a broad surface or by a mere stem. They vary in size and may completely fill the ventricle.

Symptoms:—These vary, accordingly as the thrombosis forms slowly or rapidly and according to its location. When it appears suddenly in connection with pneumonia or other pulmonary disease, the dyspnea, cyanosis and venous turgescence are all increased; as well as the frequency of the heart; which becomes irregular in action; a systolic murmur is apt to develop in the right side of the heart; the respirations become gasping in character; a deep cyanosis appears; there is coma and death. In the more chronic form the symptoms are not as marked, and frequently it gives rise to no symptoms until it interferes with the heart's action; when it is found to be disturbed both in rhythm and force, it is irregular and intermits; a murmur is frequently present that may be systolic or diastolic, but possesses no distinct characteristic. When confined to the left heart there is always a danger of cerebral embolism.

Diagnosis:—When they develop slowly they cannot be recognized with certainty. In the acute forms, the appearance of all acute systemic shocks, cardiac obstruction and development of a systolic murmur is significant.

Prognosis:—This is unfavorable; acute thrombosis usually proves fatal within a week, and the chronic forms do not disappear.

Treatment:—In the acute form absolute rest is to be insisted upon. The dyspnea is best con-

trolled by inhalations of oxygen and glonoine. Strychnia will be of service if extreme cyanosis and irregular heart action appear. In cases of irregular respiration, belladonna or atropine will be found beneficial. To arrest the development of the thrombosis, the aromatic spirits of ammonia have been used extensively, and other preparations of ammonia are good cardiac stimulants. Should other cardiac stimulants be desired, caffeine and strophanthus are to be preferred to digitalis.

ANEURYSM OF THE VALVES.

This usually results from malignant endocarditis or some degenerative process. It may project from either the aortic or mitral valve into the left ventricle or auricle. The sac may rupture and valvular insufficiency result. The symptoms are not definite as they are often associated with those due to other cardiac lesions.

A diagnosis is seldom, if ever, made during life.

The treatment must be symptomatic.

CHAPTER XXII.

ARRHYTHMIA.

This is an irregularity of the heart's action, either in volume or in rhythm. Whenever the pulse manifests irregularity it is advisable to examine the heart's contractions by auscultation and to compare them with the pulse. At times it will be found that feeble ventricular contractions do not produce a pulse beat. In view of these facts the heart rate and pulse rate should always be taken.

PULSUS ALTERNANS—In this form the intervals between the beats may be regular, but a full and strong beat alternates with a weak one. This condition may be more marked and a beat dropped altogether at regular or irregular intervals.

PULSUS BIGEMINUS:—In this case there are two beats close together which are followed by two that are farther apart. Instead of being in twos they may be in groups of three (pulsus trigeminus) or four (pulsus quadrigeminus). This is observed in some cases of mitral disease.

PULSUS PARADOXUS: — Is a condition in which the pulse is more rapid but weaker during inspiration than expiration. This is noticed in weak hearts, where there is an adherent pericardium, or pressure from inflammatory bands about the arch of the aorta.

DELIRIUM CORDIS:— Is an irregularity of the heart in which several beats come together and is then followed by a short period of rest, then one

or two normal contractions, and then another paroxysm of delirious contractions. This has been noticed during bronchial asthma, marked dilatation of the heart and the last stages of exophthalmic goitre.

TREMOR CORDIS:—Is an irregularity in which the heart, without apparent cause, takes on a rapid tumultuous action, which continues for a few seconds and is followed by an intermission of the pulse and then a forcible beat; after which there is the usual rhythm. This is observed in the weak and debilitated, who suffer from flatulence and gastric disturbances.

GALLOP RHYTHM:—Is when the heart's sounds simulate those produced by the hoofs of a galloping horse. There is a reduplication of the second sound. It is met with in chronic nephritis, anemia, typhoid, pneumonia, etc.

Etiology:—Among the direct causes of arrhythmia are meningitis, lesions of the brain, pressure upon the nerve trunks that supply the heart, structural disease of the heart, and conditions that interfere with the heart's functions. Of the reflex causes are irritation from the abdominal organs. Shock, traumatism and toxic condition, the result of poisons either generated within the body or introduced from without, are also causes.

Symptoms:—As the term arrhythmia implies, these are indicated by the irregularity of the heart's action, which may consist of a simple intermission at regular or irregular intervals. In other cases, there may be a reduplication of a beat or partial suppression of certain contractions. The

beats may be at long or short intervals; bounding or feeble and faint. The patient may, or may not, be conscious of the irregularity. When conscious of it there is usually no real distress, but there may be a feeling of insecurity and occasionally of pain.

Diagnosis:—This is ascertained in the examination of the patient. The sphygmograph is of great service in differentiating dicrotism from arrhythmia. If possible, reflex arrhythmia should be distinguished from that due to structural changes.

Prognosis:—This depends upon the form of the arrhythmia present. Regular arrhythmia, that noticed among children when sleeping; or when accompanying indigestion and dependent upon alcohol, tobacco, tea, coffee, are all favorable to life and many are relieved by removing the cause. While in those dependent upon Bright's disease, gout, cardiac degeneration and the acute infectious diseases, the prognosis is not so good.

Treatment:—In many of these cases it is impossible to accomplish anything permanent, as the arrhythmia is dependent upon some deep seated disease. In those cases where the cause is tobacco, alcohol, tea; coffee or indigestible food it should be removed. In all cases it is the primary disease that must be studied, and the remedy chosen with that in mind.

CHAPTER XXIII.

PALPITATION.

This is an increased action of the heart both in force and frequency, that causes the patient distress.

Etiology:—It is observed more in the young than in the aged, and in those who are anemic and suffer from reflex gastro-intestinal causes, and emotional and mental disturbances during the climacteric period. The toxic condition of the blood—the result of the infective disease, has often been noticed as a cause, as well as alcohol, tobacco, tea, and coffee. Regarding the sexes, the female suffers most during puberty and the menopause; while in the male it appears most during the middle and later period of life; when worry and business care are heavy. Hypertrophy of the heart is frequently a cause of palpitation.

Symptoms:—It is usually paroxysmal, being seldom constant. Preceding the attack there is a slowing of the heart's action and a pallor of the skin. This is followed by a sense of an increased force and rapidity of the heart with mental anxiety of dyspnea.

Physical Signs:—There is seen a throbbing of the vessels and the cardiac impulse is diffused. The pulse is rapid, full and strong (110 to 150). The area of cardiac dullness may be enlarged. The valvular sounds are more distinct than is natural.

Cardiac palpitation should not be mistaken for those forms where there is great rapidity and ir-

regularity of the heart's action without the patient knowing it. The palpitation due to valvular disease should not be mistaken for that due to nervous derangement.

Prognosis: — There is no real danger in itself but hypertrophy may ensue.

Treatment:—To arrest the attack the patient should be placed in bed where it is quiet and all clothing loosened over the precordial region. In some cases cold, while in others hot drinks relieve it.

Aconite: — This remedy is indicated when the palpitation is the result of fright, excessive physical exertion, functional or structural disease of the heart, lungs or stomach; in young, plethoric, robust individuals with an excitable temperament.

Arsenicum alb.: — Violent palpitation of the heart, the paroxysms being worse just after midnight. They are often accompanied by a paroxysm of nervous asthma and are attended with great restlessness and anxiety. There is frequently a periodicity about the attacks in those who are chlorotic and addicted to the excessive use of alcohol.

Arsenicum iod.: — This remedy should be studied where the arteries and heart show indications of degeneration.

Nux vomica:—This remedy is often indicated when the palpitation is the result of a deranged stomach, liver or bowels, or from the abuse of alcohol, tea, coffee, or the result of excessive study.

Spigelia:—When this remedy is indicated there

is violent palpitation which is audible to the patient. The action of the heart is irregular both in rhythm and impulse, giving it an undulating motion. The palpitation is associated with shooting pains about the heart, rheumatism and intestinal worms.

Cinchona:—When palpitation appears as a result of debilitating losses from diarrheas and hemorrhages or fevers, study this remedy.

Ignatia:—When violent emotions or grief is acute; also, asafœtida, nux moschata and cocculus.

Pulsatilla:—This remedy is to be thought of when palpitation appears as a result of menstrual derangement, or when fatty food has been taken.

Ferrum:—This remedy is adapted to anemic patients. The face changes color frequently and is red at the beginning of an attack. These patients are often tubercular; are easily excited, and if females, the menses are scanty and uterine catarrh is present.

Digitalis:—We have no remedy so frequently indicated in palpitation resulting from self abuses as this. It not only relieves the palpitation but it also diminishes and arrests the nightly emissions that so frequently accompany it.

Cannabis sat.:—This remedy should be thought of in those cases of palpitation of the heart that are the result of self abuse. It is second only to digitalis in the relief of the palpitation from this cause and in its control over the sexual excitement.

Coffee:—The palpitation is strong and visible; the patient is restless and weary, yet cannot sleep.

Calcarea carb. and sulphur:—Should be studied in chronic cases.

Chamomilla and Opium, for cases that are the result of fright.

Platina:—In cases of menstrual irregularity, retention of the menses and in cases of great sexual excitement.

CHAPTER XXIV.

BRADYCARDIA.

This is the term applied to a slowness of the pulse. It is generally conceded that the pulse must be as low as 40 to the minute before the term bradycardia applies.

Etiology:—A slow pulse is characteristic in certain families and in those who have perfect control of themselves and are not easily excited. It may be permanent, paroxysmal or temporary. When permanent, it is frequently dependent upon a structural disease of the brain in which the pneumogastric nerve is irritated; as is seen in traumatism, pachymeningitis and cerebro-spinal meningitis, hydrocephalus and epilepsy. Temporary bradycardia is often observed after typhoid fever, diphtheria, pneumonia, erysipelas, during jaundice and from intestinal toxines. The paroxysmal form appears during depression of the nervous system and disappears as that returns to a normal standard.

Pathology:—In many of these cases myocardial degeneration has been found. Of these the fibroid is more frequently met with than the fatty; while sclerotic changes of the arteries of the brain are frequently associated.

Symptoms:—The pulse rate is reduced, and during the recurrent attacks, so markedly, that it may be down to five. Giddiness, faintness, unconsciousness and breathlessness are often present in varying degree. Pallor, while not constant, is often observed. The arteries are rigid and tortu-

ous and are often below normal. The area of cardiac dullness is usually increased. If hypertrophy be present, the first sound is long and low; if dilatation be present, it is short and sharp. Dyspnea is common and the Cheyne-Stokes respiration is often present during the paroxysm. The urine is scanty. Cerebral symptoms, differing in the degree of their intensity, are present during these periods of rare pulsation.

Diagnosis:—This is based on the permanency of the diminution of the pulse, and the paroxysms of still greater infrequency. This should not be mistaken for those conditions in which there is temporary infrequency of the pulse.

Prognosis: — This depends upon the cause; where this is amenable to treatment, the prognosis is good, but when due to some structural lesion it is unfavorable.

Treatment: — The general condition of the patient must be improved, and the cause sought out and if possible removed. If dependent upon jaundice it must be corrected, as well as intestinal toxines, tobacco, alcohol, coffee, tea or uremic poisoning.

Cannabis indica:—This remedy produces a very slow pulse, but the mental and nervous symptoms are present when it is indicated.

Ascelpias cornuti:—The pulse is very slow and the patient is subject to violent nervous headaches, the pain being most marked between the eyes. The headache is often produced by the suppression of a perspiration. There is violent vomiting with soft, yellow, bilious stools.

Digitalis:—When this remedy is indicated there is usually some form of organic heart disease. The pulse is slow but may become irregular, or intermittent, and excited by the least movement. There is a sensation as if the heart would stop beating if he moved.

Opium:—The pulse is slow and full with depression on the cerebral function, as indicated by the drowsiness and stupor, the respirations are slow, stertorous and puffing.

Paris quadrifolia: — This remedy produces a slow but full pulse, especially when due to spinal affections as the result of traumatism. Thinking aggravates the pain in the occiput. The eyes feel large as if the eyelids would not close over them, or as if a thread drew them back into the head.

CHAPTER XXV.

TACHYCARDIA.

This is a recurrent, paroxysmal, rapid and forceful beating of the heart that is usually not recognized by the patient.

Etiology:—In the majority of cases paralysis of the vagus, irritation of the sympathetic, or affections of the cardiac ganglia is present. Hysteria, anemia, chlorosis, tea, coffee and tobacco are often among the exciting causes; as are rheumatism, influenza, diphtheria, mental excitement and gastric disturbance.

Pathology:—It should be remembered that the pulse rate is normally high (100), with some individuals; while others can increase its rate at will. The neurotic condition in some of its various forms is observed in many of these cases; while in others, more serious lesions are present which lead to paralysis of the vagus; as tumors, clots, aneurysms and enlarged glands. It may be produced by reflex irritation from the ovaries, uterus or intestinal tract.

Symptoms:—In the majority of cases there are recurrent paroxysms of the tachycardia. The attack may appear at any time, suddenly and without any warning; occasionally a slight vertigo or tinnitus may be complained of. The patient becomes pale, cyanosis may be present, and a pulsation of the carotid arteries or jugular veins noticed. The cardiac movement is greatly accelerated and may be anywhere from 150 to 300 to the minute. The pulse is nearly always feeble,

irregular, small, and frequently it cannot be counted at the wrist; when auscultation must be resorted to. These pulsations are maintained at the same ratio night and day. Respiration is not changed to any marked degree. While uneasiness and at times pain may be complained of, it is not the rule; for in the majority of cases, the patient is not conscious of any accelerated heart action and may even have a sensation of slowness of the heart. Upon physical examination the area of cardiac pulsation is increased, while its force is diminished. There is a varying degree of pulmonary hyperemia present, with subcutaneous edema and albumen in the urine.

Diagnosis:—This is based on the high pulse rate, and the absence on the part of the patient of any sense of rapid heart or palpitation. It must be differentiated from palpitation. In palpitation the pulse rate is not so high, and there is dyspnea and smothering, precordial distress.

Prognosis:—The course of this disease is chronic and recoveries are rare. If the cause be such as can be removed, it may be cured, but not always. It should be remembered that a cerebral vessel is liable to rupture during an attack.

Treatment:—This is dependent upon the cause and the possibility of its removal. When due to reflex causes, just as the part involved is relieved, so will this disappear. If from exhaustion of the nervous system, this must be given rest and the nutrition improved. If due to fright or some emotion, a complete change of scenery and surroundings are often of benefit. Any excess in tea, coffee, or tobacco should be stopped. If the result of cardiac degeneration, baths and systematic exer-

cise are frequently of benefit; if there is an actual degeneration of the nervous structure, treatment is not beneficial. During an attack, firm pressure upon the thorax is often of assistance.

The power of suggestion should be remembered and used in the treatment of this class of patients. Some patients can ward off an attack by taking a deep inspiration and holding it as long as possible. All forms of cardiac tonics should be avoided unless cardiac dilatation or weakness be present.

Aurum mur.:—Where there are evidences of myocardial degeneration, this remedy given in the 2x for a long period is often of service.

Spartine sulphate 1x:—One grain every hour is often beneficial in myocardial degeneration of neurotic subjects.

Ammonium valer:—This remedy is indicated in neurotic and hysterical patients, who are suffering from nerve exhaustion; the heart being weak and erratic.

CHAPTER XXVI.

ANGINA PECTORIS.

This is a disease characterized by excruciating pains in the cardiac region, a sense of utter powerlessness, and fear of impending dissolution. It has been divided into two varieties, the true and false.

Etiology:—True angina is most frequently met with in males who are past forty years of age. A large proportion of these cases show fatty degeneration of the heart, with sclerosis or calcification of the coronary arteries; while in other cases it has appeared to depend upon aortitis, adherent pericardium, cardiac hypertrophy, aortic regurgitation or stenosis, and arterial sclerosis. In certain families there appears to be a hereditary tendency to development of such conditions as produce these paroxysms. Derangement of the alimentary canal, dilatation and distention of the stomach, and toxic agents as tobacco, tea, coffee and alcohol have each at times been recognized as causes; in many, the attacks are precipitated by over exertion or some pronounced mental emotion. The pseudo angina occurs in neurasthenics or the hysterical, during the early part of life and is frequently associated with uterine or ovarian irritation, dysmenorrhea and salpingitis.

Pathology:—It should be remembered that angina pectoris is a neurosis, no definite pathological change being constant, and yet structural changes are so frequently associated that they demand attention. Among these changes are interstitial myocarditis with arterial sclerosis, especially of the coro-

nary arteries, as well as fatty degeneration, and gummata with its attendant fibroid changes. Apart from the sclerosis as already mentioned, endarteritis deformans and obliterans have their influence, especially as they affect the nutrition of the heart. With this group should be placed structural changes in the aorta and coronary arteries and occlusion of the openings of the latter. Neuritis of the cardiac plexus of nerves has been demonstrated in a few cases.

Symptoms:—True angina pectoris begins suddenly, usually during some mental emotion or marked exertion. The patient is seized with a most excrutiating pain which is griping in characacter, rendering the body motionless and involving the whole chest. The pains radiate to the left shoulder and arm, at times the right is involved; the pains may be felt in the neck and back and accompanied by a sensation of coldness and numbness, and a sense of impending death. The countenance becomes pale and is bathed in a cold perspiration. The respirations are shallow, but the patient can breathe deeply. The heart's action may be regular and the arterial tension is usually increased. The duration of the attack varies from a second or two to an hour or longer, and is followed by eructation of gases, vomiting or passage of large quantities of pale urine.

The pseudo angina occurs most frequently in females of the hysterical and neurasthenic type, who suffer from derangement of the uterus and its appendages. There is frequently symptoms of disturbance of the vaso-motor system. Careful examination reveals the hysterogenic spots and anesthetic

area. The recurrence of the attack varies; it may return at any time, or months and years may intervene. If the patient is careful not to become exhausted and is of a calm disposition, the intervals between the attacks may be lengthened. It has been observed that as dilatation of the heart takes place, the attacks become less frequent and less severe.

Diagnosis:—This is dependent upon: the pain which comes quickly, is most severe in and confined to, the region of the heart, and radiates to the shoulder; the mental anxiety; and the inability of the patient to move. He is past the meridian of life and is apt to present indications of circulatory disturbances.

Pseudo angina is seen most frequently in hysterical and neurasthenic females; the attack is often produced by some emotion. The patient does not keep quiet, and the pain may radiate all over the body. Neuralgia of the heart is found from tobacco and alcohol, but there is the odor and other evidences pointing to these as the cause. Lead poisoning is indicated by the abdominal colic, the blue line on the gums, and the constipation. Intercostal neuralgia and cardiac asthma should be remembered as they have been mistaken for angina pectoris.

Prognosis:—In real angina this is always grave; especially if there is arterial sclerosis, disease of the valves, or myocardial degeneration. If fatty accumulation is the cause, the prognosis is more favorable. In those cases where it is dependent upon a toxic condition, its removal renders the prognosis better; in those cases where it is due to neurotic

condition, recurrence is common, but it does not kill.

Treatment:— If anything permanent is to be accomplished by treatment, a most careful examination of the individual case must be made. Not the attack alone, but the habits of the patient, his family history and environments must all be studied in every possible light. In the management, each case must be considered separately and the causes that excite an attack sought after. Many of these patients already have recognized the cause in their own case and often it is some irregularity of diet, exercise or mental condition. Many times it is not an easy matter to control the mental state, as the worry and strain of business life presses upon many of these patients, and is responsible for many cases of arterial degeneration that give rise to apoplexy, Bright's disease, aneurysm or angina pectoris. The age and occupation of the patient, and the condition of the vascular system should be taken into consideration.

Following an attack the condition of the heart may require absolute rest, from a day to a week or more; this is especially true if the attacks are precipitated by slight degree of exercise, which shows that the heart is not able to propel the blood under anything but normal conditions. Under no condition should quick movements and strong emotions be associated. Steady quiet exercise as walking upon level ground is beneficial. If the cardiac weakness is such as to forbid this, massage, or the resistance exercise of the Schott's method may be tried. This exercise should not follow immediately after a meal.

In many of these cases the diet is most important. Generally they are good feeders on rich and strong food. First the quantity must be reduced, for the great majority eat too much. All food that distresses the patient in any form should be forbidden, especially those that give rise to flatulence. In cases where there is marked indication of atheroma and calcification of the arteries, those articles of food that contain an excess of lime, as milk, eggs, cheese, etc., should be eliminated so far as possible. In those cases that are known as false angina, the neurasthenia and hysteria must be overcome; at times a positive diagnosis that no serious heart lesion is present, is of great benefit to the patient. In many of these cases the Weir Mitchell treatment, systematic massage, and static electricity is of service. Some patients know of an approach of an attack due to some indiscretion in diet, and take steps to relieve the stomach of the offending meal.

During an attack, a pearl containing five drops of the nitrate of amyl should be broken on a towel and the vapor inhaled. This drug will give better results in cases of true angina than in the false form. One or two drops of the first centesimal of glonoine by the mouth, will often cut an attack short. It is advisable to let the patient have one or both of these drugs with him, to be taken in an emergency, for it is seldom that a physician can reach the patient in time to render any service during the attack. In giving the patient these drugs he should be warned of the dangers from them. Chloroform has been employed, but its first action is slow, as is opium and its alkaloid morphine. In

pseudo angina, magnesia phos. in hot water, a dose every three to five minutes will often bring relief. Cold applications to the chest or swallowing pieces of ice have been known to break the paroxysm.

Natrum iod.:—This remedy in from five to twenty grains three times a day, will be found to give most excellent results where there is organic disease of the heart, associated with the angina pectoris. There is an oppression in the region of the heart that is attended with a fear of death and a feeling as if something dreadful was about to happen.

Kali iod.:—Severe pains in the centre of the chest which extends to the shoulder. The pains in the chest are very severe; the patient desires to get into the fresh air; there is oppressed breathing and loss of voice.

Spongia:—There are sudden cramping pains within the chest with oppressed breathing and sensation of suffocation. The face is pale, a feeling of nausea is complained of. The lower portion of the body feels numb while the upper portion is sore.

Cactus grand:—When with the angina pectoris there is an organic lesion. There is a sensation as if the heart were grasped by an iron band preventing its normal movements; with a continuous palpitation of the heart, which is aggravated by walking, and at night when lying on the left side.

Arsenicum:—When the attacks are periodical, are attended with faintness and extreme weakness, worse after midnight and from motion. There is great mental and bodily anxiety with severe pain that extends down the arm, and great prostration

and dyspnea; the surface of the body is cold, and there is marked prostration following the attacks.

Spigelia:—There is constriction and painfulness in the left side of the chest which arrests the breathing and causes a sensation of suffocation. The palpitation of the heart is pronounced and the pains are aggravated by motion and leaning forward.

Cuprum:—Where there is but little vitality; in feeble individuals, with slow pulse that have suffered during a long period. The attacks appear suddenly, are attended with great dyspnea, the surface of the body is cold and blue and there is a tendency to cramps.

Laurocerasus:—In recent cases where there is marked structural lesion. The attacks are severe, are attended with great suffering, gasping for breath and loss of speech. The skin is moist and cold.

Aurum mur.:—The attacks are precipitated by walking in the open air; the palpitation begins and grows worse, and the pain more severe while in the open air; but relief is found by going to a closed room where the patient can walk for an indefinite period with no discomfort.

Veratrum alb.:—This remedy will be found of service in functional cases where there is a feeling of impending suffocation, with constriction of the chest and cutting pains that arrest the breathing.

Tabacum:—When this remedy is indicated there is an intermittent pulse, pallor with cold, clammy perspiration, vertigo and deathly nausea. There are accumulations of white tenacious mucus in the mouth, and great thirst with deathly nausea and

vomiting, which comes in paroxysms and is made worse by motion. The stomach feels relaxed as if sinking in. There is violent palpitation of the heart with paroxysms of precordial oppression and pain between the shoulders. The pulse is feeble, soft, slow and intermittent. The patient complains of great weakness and debility, is restless and desires to change his position often.

Lilium tigrinum:—This remedy will be found of service in nervous affections of the heart. The patient is usually of the female sex and suffers from ovarian and uterine diseases. She is depressed in spirits and inclined to weep. She feels that things must be done at once but is unable to perform the task, and mental irritation results. The abdomen is distended, and there is such a dragging downwards of the organs of the abdomen and chest that she supports the abdomen with her hands. She is a subject of morning diarrhea, when there is great pressure in the rectum and a constant desire to go to stool. There is a constant desire to urinate, which is worse during the day; the discharge is scanty and is followed by a burning and smarting in the urethra. There is a sensation as though the pelvic organs would press through the vulva, with sharp pains in the ovarian region; she finds relief by pressing the hand against the parts. A constant distress about the heart is complained of with sharp quick pains, also a fluttering and palpitation of the heart and a feeling as if it was squeezed in a vise, or was alternately grasped and relaxed. Her limbs are cold, with burning of the palms of the hands and soles of the feet. She is worse at night and finds relief during the day by keeping busy.

Nux vomica:—Should be studied in the gouty, hemorrhoidal patient, where it is so frequently indicated.

Aconite:—In pseudo angina, has relieved when its characteristic symptoms are present, as well as digitalis and naja.

CHAPTER XXVII.

NICOTINE POISONING.

This is the result either of working with or the use of tobacco; whereby the heart's action is functionally deranged. In mild cases, irregularity is noticed, with palpitation on exertion, the patient being aware of the heart beats. The long continued over-excitement leading to disturbance in its rhythm and to cardiac hypertrophy. The pulse rate may be normal, but usually it is irregular. Anginal attacks are present in many of the well marked cases, while in others, there is precordial oppression. The patient complains of dizziness, with weakness and failing health; tremor of the hands and loss of strength. The appetite is poor; there is nausea and vomiting, with melancholy and depressed spirits.

Physical Examination:—While it may reveal no definite cardiac lesion, there is usually a deficiency in some of the heart sounds; reduplications are often observed and the rythm is irregular. Murmurs are rare, but when present are functional and due to an altered tension of the heart muscle; a change in the force of the cardiac impact against the chest wall and anemia. They disappear with improvement of the general health.

The greater part of the effects of tobacco, that interests physicians, is its action on the heart, nerves and throat. The results are functional, lessening the heart's power to stand work. Neurasthenia is a frequent result of prolonged smoking.

Treatment:—The use of all tobacco must be

stopped or modified under the physician's direction. The general health must be improved by a nourishing diet, baths, fresh air, etc.

Nux vomica will benefit those of a malicious, irritable temperament; who fall asleep early in the evening and awake early in the morning. There is a bad taste in the mouth in the morning; the first half of the tongue is clean, the back part coated. The bowels are constipated, with frequent but ineffectual desire for stool.

Ignatia amara:—This patient is full of silent grief and a sensation of goneness in the pit of the stomach. The bowels are inclined to be loose, with neuralgia of the rectum, which returns at regular intervals.

Convallaria:—In tobacco heart, the result of cigarettes. Where there is dyspepsia with torpor of the stomach. The mucous membrane of the mouth is pale and flabby. The tongue is broad and thick, and is covered with a heavy, dirty white coating.

Hydrocyanic acid:—Where there is much pain about the heart with rapid and irregular action. This remedy will relieve the irritable and irregular action, the result of the increased nerve force and over stimulation.

Cactus grandiflorus:—There is irregularity of the heart's action with nervous excitement. The patient is debilitated, has indigestion and there is a feeling of an iron band about the heart preventing its normal action.

Veratrum alb.:—For the bad results from chewing tobacco.

WEAK HEART.

This is a term applied to certain cardiac phenomena, characterized by a loss of energy, when it is impossible by physical methods to define any structural lesion.

Etiology:—A percentage of these cases are congenital; of the exciting causes are, pyrexia, alcoholic excesses, poor nutrition, loss of fluid, and also, a continual over-exertion.

Pathology:—In some of these cases no lesion is discernible under the microscope; while in others, the muscle is relaxed and easily torn. At times a fibrillary, fragmentary, granular, or pigmentary atrophy is demonstrable. Undoubtedly, in some of these cases a myocardial degeneration is present.

Symptoms:—In some cases the symptoms are over-shadowed by the disease, of which the weakness is a part. In others there is faintness, breathlessness, giddiness and palpitation; with a small, empty pulse that may be slow or rapid and is usually irregular. The heart's action is feeble and the area of cardiac dullness normal, unless dilatation is present. The heart sounds are feeble especially the first. There is apt to be venous stasis, and as a result, interference with the function of various organs. Often a systolic murmur and impulse are to be heard and felt at the second left intercostal space.

Diagnosis:—The condition of the pulse; enfeebled cardiac muscle and the result of physical examination in general; the state of nutrition, bloodlessness, prexia, cachexia, etc., are the basis of the diagnosis.

Prognosis:—This is dependent on the cause.

Treatment:—This includes the removal of the cause and the employment of proper diet, rest, air, congenial surroundings, massage, baths and exercise. The etiology of the cases is varied, and each must be understood before an intelligent treatment can be instituted. When the case is congenital, it will depend wholly upon the defect as to whether or no the treatment will be of much benefit. In all these cases the deep acting, constitutional remedies should be studied, as sulphur, the lime salts and silicates. When it is the result of some prolonged illness, the patient's heart should always receive a careful examination before the patient is allowed to sit up. Frequently, calc. phos., or one of this group will be found of service. Should it be determined that an excess of alcohol or tobacco is the exciting cause, it must be stopped, or at least modified, and such remedies employed as will assist in repairing the damage.

When poor nutrition is the exciting cause, this must be improved, not only by the diet, but by a change of climate, social surroundings and the employment of such remedies as will assist the system. If there has been a loss of fluids and the loss is acute, the employment of normal salt solution should be used; if not so acute, the loss should be controlled and an abundant amount of easily digested and nutritious food should be employed, while such remedies as china, phosph., helonias and phos. acid studied. In those cases where there has been a continual over-exertion, there must be a let-up; such habits adopted as will not over-tax the organ, and at the same time allow it to regain its power.

Nux vomica or ignatia is often of service when mental worry has been associated with the overwork. Arnica will be of service if there have been severe strains. If, with the weak pulse, there is faintness and vertigo, digitalis or crataegus will be found serviceable.

Phaseolus nana:—This remedy has been found of service in cases where the heart's action is very weak and irregular. There is a feeling of impending dissolution, with palpitation of the heart and general dropsy. The pulse is scarcely perceptible and is irregular.

Antimon. ars.:—There is great weakness of the heart with excessive dyspnea and cough.

Caffeine:—When, with the weak heart, there is marked exhaustion, the result of some prostrating disease.

Kola:—In cases of weak heart, in those who are hysterical and in neurasthenics, where there are indications of cerebral anemia with melancholia.

Kali ferrocyanatum:—This remedy will be found serviceable in cases of anemia with functional disorders of the heart, in which the heart is weak, and the pulse is weak and irregular.

Zinc cyanide:—In cardiac neurosis where there is great sensitiveness with a bad temper and the patient is subject to attacks of anger. The face suddenly changes color; the heart is weak; there is frequently a spasmodic retching and gastral gas, which seems to be sympathetic.

CHAPTER XXVIII.

CONGENITAL HEART DISEASE.

The product of reproduction may be affected during any period of its ante natal development. During the first period of existence, before the union of the germ and the sperm cell; also during the second period, from impregnation to the beginning of the development of the special organs; (at about the eighth week), any derangement leads to the development of fetal malformation. While from the last mentioned period to birth, is the period that develops fetal disease.

The anomaly depends upon the stage at which the process of development ceased. If there was but an auricle, ventricle and aortic bulb, a heart with but a single auricle and ventricle results; or, the septum between the auricle and ventricle may be absent, giving the reptilian heart. The arrest of development may be in the inter ventricular septum, or between the auricle, when a patent foramen ovale results; which is the most common of all malformations of the heart. Any malformation in the aortic bulb may lead to a double aorta.

Infectious diseases and acute rheumatism cause fetal endocarditis and valvular changes similar to those found later in life.

Pathology:—Many of these malformations render life impossible. Of all the malformations, a reversion of all the organs is the simplest met with. Ectopic cordis is seen at times; when, either from absence of the sternum or other causes, the heart is exposed externally. The changes found in the

valves are confined to the right side of the heart, and are sclerotic in nature. The pulmonary orifice is more frequently diseased than the auriclo-ventricular.

Symptoms:—At times there is a complete absence of all symptoms that would call attention to any such lesion. The one marked symptom of congenital heart disease is cyanosis. This usually appears during the first week of life, and varies from a general duskiness to a violet or almost black hue. It is most marked about the lips, nostrils, lobules of the ear, the fingers and toes. During quiet, the color may nearly pass away, but returns on the slightest exertion. The fingers are clubbed and the nails are thickened and arched. The extremities are cold and the temperature subnormal. Dyspnea is present on exertion, and cough is present much of the time. There is a tendency to hemorrhages. The patient is sensitive to cold or slight changes in the temperature. There is a lack of development, both physically and mentally.

Inspection:—An arching of the precordial region is noticed in many of these cases, due to enlargement of the heart, while the bones are still pliable.

Palpation:—This may reveal a thrill which is most pronounced at the base of the heart and to the left of the sternum.

Percussion:—In the young the cardiac dullness is increased to the right.

Auscultation:—This depends on the form of lesion present, but a systolic murmur at the pulmonary orifice is the one most frequently heard.

Physical examination:—Should easily detect a transposition of the organs.

Diagnosis:—This depends upon the presence of cyanosis, which begins during the first week of life, the right side of the heart being affected. The murmur is loud, musical, and has but a limited area of transmission. The bodily development is deficient and the mental state of the patient is below par.

Prognosis:—This is not good. Many die within the first few days; fully one-half within the first year, and not more than one-fourth live to be four years of age, and the remaining fourth is still lessened before puberty. Those who live past the first week are subject to phthisis and hemoptysis.

Treatment:—If possible, these patients should live in a warm, dry climate. When this is not possible, the body must be protected by flannels and care taken that exposures be as light as possible. The diet should be easily digested but liberal, and extra carbo-hydrates should enter into it. Gentle daily exercise, sponging of the body, with friction, and everything possible to assist the circulation should be observed.

SYNCOPE.

Fainting, swooning.

This is a complete loss of consciousness which is usually temporary, but it may be a mode of death.

Etiology:—It may result from cerebral or cardiac causes; acute diseases of the heart, as myocarditis and pericarditis, or cardiac degeneration; imperfect blood supply; deficient nervous or muscular power, emotional disturbances, insufficient food, heat and close rooms, violent and protracted pain, amenorrhea and profuse natural discharges.

Symptoms:—There is dimness of the sight, noises in the ears, the lips and face become pale and are covered with a cold perspiration, the pulse becomes weak, the breathing slower, and the patient falls. While in a few cases the patient may know what is done, yet in most of the cases he is not conscious; as recovery takes place there are deep sighs with confused ideas, vertigo and headache, and there may be vomiting and purging.

Diagnosis:—This is usually easy but it should not be mistaken for hysteria.

Prognosis:—When these attacks co-exist with heart disease it is an unfavorable sign, but usually the prognosis is favorable.

Treatment:—The patient should be placed in a horizontal position at once, all tight clothing loosened, a current of air allowed to pass on the face; use fans and sprinkle cold water upon the face. During the attack ammon. carb., camphor or moschus may be used by olefaction.

China:—When the fainting results from a profuse loss of blood, diarrhea, perspiration or from exercise.

Digitalis:—When there is feebleness of the heart.

Iodium:—This remedy should be studied when as a result of a constitutional debility, there is a tendency to faint.

Opium:—When fainting is the result of fright.

Linaria vulgaris:—The patient faints dead away without apparent cause, usually of cardiac origin.

CHAPTER XXIX.

EXOPHTHALMIC GOITRE.

Basedow's disease, Grave's disease, Tachycardia strumosa.

The true origin of this disease is still in doubt, but is usually ascribed to a derangement of the nervous system; or to an increased and perverted function of the thyroid gland.

Etiology: — Its prevalence in certain families would lead one to believe that heredity is at least a predisposing factor, as well as a neurotic predisposition. It is more common in women than in men. And while seen at the extremes of life, it is a disease of the adult. Of the exciting causes are, profound mental impression, sudden fright, grief and mental anxiety.

Pathology:—It should be remembered that the protrusion of the eye balls is not as marked after death as it appeared during life. The protrusion is due to an increased vascularity, and an excess of the retro-orbital fat. The thyroid is of a brownish color, is firm and uniformly enlarged; the enlargement being due to an increased vascularity and augmentation of the secreting structures. The heart may be normal or it may show both hypertrophy and dilatation.

Symptoms:—The cardinal symptoms are an increased frequency of action and palpitation of the heart, protrusion of the eye balls, enlargement of the thyroid gland and tremor. On examination the cardiac impulse is seen to be forcible, while later in the affection, the superficial area may be

enlarged. The arteries, and at times the veins and capillaries, show pulsation.

Palpation:—This shows an increase in the force of the cardiac impulse.

Percussion: — Outlines an increased area of cardiac dullness as hypertrophy and dilatation of the heart take place.

Auscultation: — Reveals an accentuation of the valvular sounds, and a blowing murmur over the heart and great vessels. The thyroid enlargement is due to dilatation of the blood vessels, especially in the arteries; it may be general or partial, and varies in size according to the condition of the the circulation.

Pulsation of the gland is visible at times; a distinct thrill is felt over it and a double systolic murmur may be heard, but this is not constant.

The exophthalmos varies in degree from time to time, dependent upon the amount of blood or lymph in the orbit; in advanced cases the prominence is more constant, due to an increase in the amount of adipose tissue. When the eye is turned downward the upper lid is seen to lag behind, not following properly the eyeball downward, and on closing the eyes a rim of white is seen above and below the cornea.

Muscular tremor is an early symptom. It is fine in character, involuntary, and about eight to the second. There is great depression of spirits and even mania or melancholia may be present. The temperature may be elevated and associated with perspiration.

Pigmentation of the skin is seen at times; an

edema appears, first about the ankles and then becomes general. The patient becomes weak and anemic; vomiting and purging is severe at times, while hemorrhages and albuminuria are often met with as compensation fails.

Diagnosis: — This is dependent on the tachycardia, the tremor of the fingers, the exophthalmos and the enlargement of the thyroid. In many cases these symptoms do not all appear at first, and some one of the group may not appear at all.

Prognosis:—Many of these cases are amenable to treatment. The disease may last for years and relapses are common.

Treatment:—The surroundings of the patient should be as congenial as possible. A change of climate to a moderate elevation (3,000 ft.) is often beneficial. A wet pack and massage have assisted a few cases. Cold applications over the heart often assist in controlling the heart hurry. Rest in bed for several weeks is often beneficial. Surgical interference is often of service. The continuous galvanic current, applied from ten to twenty minutes, twice daily for three or four months, is often of service. Systematic respiratory exercises that increase the chest expansion will be found beneficial in many of these cases.

Lycopus Virginicus:—This remedy is probably indicated more frequently than any other. When there is a rapid pulse, abnormal cardiac action it being tumultuous and forcible. There is cough and often hemoptysis. It appears to give the best results when given in five-drop doses of the tincture every three hours.

Spigelia anthel:—This remedy produces a violent action of the heart, with great rapidity, protrusion of the eyeballs, and many symptoms that show a similarity to this disease.

Ferrum iod.:—This remedy will be indicated in cases of disturbance of the female sexual organs, when the menses are scanty or suppressed. The body is emaciated and anemia present. It has cured exophthalmic goitre following suppression of the menses.

Belladonna:—When indicated in this disease, it is usually early; when there is throbbing of the carotids and a beating is felt in the head. The pupils are dilated and the eyes are prominent. The thyroid is enlarged. The heart's action is forcible and increased in frequency.

Natrum mur.:—When this remedy is indicated there is depression of the vital forces and the general nutrition of the patient is below normal. The mental condition present is one of hopelessness and fear regarding the future. The mouth is dry, the tongue is sore and mapped. The bowels are constipated, the stools so hard that they lacerate the mucous membrane of the sphincter. The skin is dirty and flaccid. Chlorotic symptoms are present. Coldness is complained of, that may be general or local (lower half of the body). There is marked fluttering of the heart, with intermittent and irregular pulse.

Iodium:—When this remedy is indicated there is marked emaciation and ravenous hunger which cannot be satisfied. There is protrusion of the eyeballs; with violent palpitation of the heart, worse on exertion; and a constant, heavy, oppres-

sive pain in the region of the heart. The pulse is rapid, small, weak, and often irregular. All diseases demanding this remedy are characterized by torpidity.

Aurum: — Mental depression with suicidal tendencies are present when this remedy is indicated, Violent palpitation of the heart, with precordial oppression and hypertrophy of the heart.

CHAPTER XXX.

THE SENILE HEART.

Definition: — This is a term applied to certain changes that result in a premature senility of the heart when it is compared with the other organs of the body.

Etiology: — Of the many causes of the senile heart none are more potent than the great mental strain incident to modern business life. Senile vascular changes and peripheral resistance, all result in extra strain upon the myocardium and aid in its early degeneration. The condition just mentioned may be dependent upon structural changes in the arteries and capillaries or an increased amount of blood. Acute diseases at times, have such a profound influence upon the heart that it does not regain its vitality; not only acute, but chronic diseases as well, start a train of influences that render the heart indirectly incompetent. Loss of blood or fluids from the body and sexual excess, all act upon the heart in an injurious manner. An excess of food, stimulants and narcotics, as well as over-exertion and violent emotions, all tend to a premature senility of the heart.

Pathology:—This is as varied as the etiology, but whether it is the myocardium or the arteries that present the greater structural changes, the primary lesion is nearly always in the inhibitory nerves. And while fatty degeneration, pigmentation and aneurysm may be found, none of them are constant, but there is a weakened condition of

the myocardium with a greater or less degree of dilatation of the cavities.

Symptoms:—Many of these cases steal upon their victims unawares. One of the earliest symptoms complained of, is an uneasiness in the cardiac region which seldom amounts to an actual pain, but at times it does; it is always confined to the area of the heart and there are no shooting or darting pains connected with it. As the result of reflex causes or exertion, attacks of palpitation appear in which the heart's action is not forcible but rapid. These attacks are prone to appear at night, the result of gastric irritation. Tremor cordis appears at times without apparent cause. The pulse may be temporarily or permanently irregular, this may be both in force and frequency. If not controlled, sooner or later dilatation of the left ventricle follows. The intermission of the pulse is not to be looked upon with suspicion in the young, but it is in the aged, as it favors dilatation. The ease with which an irregularity is evoked should be observed, as it indicates the actual strength and relation of the heart and nerve supply.

As stated before, the senile heart is nearly always dilated; the degree of the dilatation should always be noted. The position of the apex beat is to the left of the normal. The heart sounds undergo a gradual change. During the early stage the cardiac impulse is feeble, the first sound is altered and varying in character, being at times prolonged, blunt or feeble; again it is booming and clear; the second sound is accentuated, showing that the aorta is still dilatable.

There soon appears a systolic murmur which may not be constant at first; it is heard first in the auricular area in the second intercostal space to the left of the sternum. It is dependent upon the left auricular appendix pressing upon the chest wall, as a result of a dilatation of the heart, and the appearance of a mitral regurgitation. The murmur is more pronounced after exercise and may be absent after a rest; but sooner or later it is constant and is followed by a systolic tricuspid murmur. In a proportion of these cases there are changes in the aortic valve. A most constant symptom in many of these cases is breathlessness, especially during any exercise, but it may be present at any time and is spoken of as cardiac asthma, and is often a forerunner of heart failure. In many of these cases there are indications of gout or lithemia as indicated by the dyspepsia, glycosuria and condition of the kidneys and arteries.

Diagnosis: — This is based upon all the given symptoms of a given case and the fact that the heart is showing senility before the other organs.

Prognosis: — If taken in time, the habits and life of the patient may be so regulated that the life is prolonged; but the changes that produce the senile heart are progressive, unless controlled.

Treatment: — These senile changes are degenerative in character and while they may be stayed and the injury partially compensated for, if anything permanent is to be accomplished the patient's every habit must be carefully weighed and his whole life, physical, social and mental, carefully studied. It should be remembered that all affec-

tions of the aged are not senile in character or origin. As the earliest symptoms appear, there is uneasiness and cardiac irritability with a slight degree of pain and "tremor cordis." The attendant should recognize that he is dealing with a case in which the metabolism is imperfect, and so far as is possible, the cause sought out and corrected.

The pulse should be studied carefully. If the tension is low, inquiry must be made as to any continuous drain upon the system; an examination of the blood is of service in determining the actual condition. These same remarks hold true in cases where the pulse tension is high. After thoroughly investigating the conditions of the patient and removing all exciting causes, attention must be directed to the hygiene, exercise, diet and medicine. The hygienic surroundings of the patient should be perfect. The amount of exercise taken should be ascertained; for if it be in excess, it will lead to hypertrophy; but if rightly employed, it will strengthen the weak heart. The exercise as suggested by Oertel or the baths and exercises as carried out at Nauheim is often of great service.

When the compensation is *just full* and the least exertion produces dyspnea, it is rest and diet that are demanded, not exercise. At times it will be found that during exercise the cardiac intermissions and irregularities disappear; when they do, they are reflex in their origin, and as the result of a more perfect metabolism, the urea is manufactured in an increased quantity and the blood purified. When breathlessness, palpitation and ir-

regularity of the heart are provoked by exercise, it is rest that is indicated.

In investigating the habits of the patient, the excessive use of food and drink should be inquired into, for many are over-eating. Those who are above the average weight, and as a result, are suffering from breathlessness, require such a diet as will reduce the obesity but at the same time, not in any way interfere with the myocardium. In those cases where there is dilatation of the heart and edema is appearing, showing involvement of the myocardium, the patient requires a dry diet. In those cases where the patient is below normal in weight and there is no dilatation, but there are intermissions, they require a nutritious diet. In giving directions for feeding these patients, the day should be so divided that there are five hours between each meal; the meals should be about equal in quantity, the stomach not being distressed by it; and no food should be taken into the stomach while it is still digesting. The stomach should have at least one hour after having finished the digestion of a meal, to rest before the next meal is partaken of.

Five hours between meals — no solid foods in the meantime — the important meal at midday and dry food for those with dilated hearts, are rules to which there are no exceptions for invalids with diseased hearts. In all cases it must be ascertained what the patient can digest with the least distress when gout or lithemia is a prominent symptom.

In selecting the diet for these patients only those meats with the finer and shorter fibres should

be selected, and those vegetables that produce but little flatulence chosen. The meal should always be as dry as possible. If the food cannot be taken without fluid, not more than four or five ounces should be allowed with each meal. Tea and coffee, if taken at all, should be in moderation; alcohol is not beneficial to the heart, as its secondary action is depressing; a few sips of hot water will have a more permanent effect upon the heart than alcohol in any form; cocoa is too much of a food to take the place of a fluid and should be considered rather as a food. When thirst is complained of, the patient may be allowed to take eight ounces of hot water at four hours after each meal, this will clear the stomach and after a short rest will prepare it for the next meal. When there is a general anasarca the patient should be given the driest diet that it is possible for him to take, and not too much of that. Narcotics in any form are injurious to a weak heart; this remark applies to tobacco.

Digitalis:—It is evident that in restoring a broken down myocardium, we have no remedy so frequently indicated as this one. The heart is weakened, it is unable to contract forcibly, and as a result the arteries are empty while the veins are distended, the heart's action is feeble and becomes irregular on any exertion. There is frequently a sensation as though the heart would stop if he moved; on sitting up the patient complains of faintness and anxiety. The pulse is slow much of the time but may become rapid.

Nux vomica:—Or at times strychnia will be found serviceable in many of these cases. Its

special indications are too well known to every physician to be repeated here. It will be found to benefit when the digestion is poor and the nervous system below par, hyperesthesia of all the senses being noted. It is one of the most active heart tonics and will restore the drooping vitality of many of these senile hearts.

Arsenicum:—This remedy is frequently indicated by the stomach symptoms present, the nausea and distress that is so characteristic of it. The patient is apt to be subject to anginal attacks that appear frequently at night. It renders the heart more competent to perform its task and the patient can move about better after having taken it for a time.

Arsenicum iod.:—This combination will act better than the arsenic alone, especially if there is marked change in the arteries combined with the other symptoms. A combination of arsenicum and strychnine is frequently of more service than either of these remedies alone.

Strophanthus:—While this remedy is not as frequently indicated as digitalis, if there is any reason why digitalis cannot be taken, this remedy should be studied.

Ferrum:—May be demanded in certain anemic cases. Glonoine is called for when anginal pains are frequent and the pulse of a high tension.

Colchicum:—Where there is a history of gout with the symptoms calling for it.

Lycopodium:—Where there is great flatulence and the other symptoms correspond.

DROPSY.

This is but an exaggerated physiological condition. Normally, there is a continual pouring out into the tissue from the capillaries of a part of their contents, known as lymph. When once poured out, a part of it goes to nourish the tissue, while the remainder is taken up by the veins and lymphatics and restored to the circulation. During health it is removed as fast as it is poured out, and no accumulation takes place in the tissue. When there is an accumulation it constitutes dropsy.

This is a common complication of certain forms of heart disease, when it is either the result of an obstruction to the return flow of venous blood, a loss of tone in the blood vessels, or a watery condition of the blood. Mitral insufficiency is the valvular lesion above all others that gives rise to dropsy; mitral stenosis is not as potent a factor in its production. Primarily, neither aortic insufficiency nor obstruction are attended with dropsy; but later, when the blood is pressed back into the left ventricle, it then appears. Dilatation of the heart is frequently accompanied by dropsy, while it is seldom found in cases of fatty degeneration, as in the latter, the force in the arterial circulation is lacking, and this force is essential to produce the pressure in the capillaries, that effusion may result.

It should be remembered that in cardiac dropsy there is an increased fullness and pressure in the veins, and a reverse condition in the arteries; while in dropsy due to renal disease, the fullness and pressure is in the arteries. Cardiac dropsy is probably due to a diminished absorption; while renal

dropsy, apart from cardiac involvement, is due to an increased exudation.

While the treatment of dropsy is invariably the treatment of the condition that produced it, yet a few remarks here may be in order, The posture of the patient should receive attention. The horizontal position is demanded as it lessens the venous pressure in the limbs and relieves the heart. In cases where the dropsy is so marked that the patient cannot lie down, puncture and drainage of the legs is followed by relief.

The diet should be as dry as possible. Of the remedies that may be called for are, apocynum can., stigmata maidis. digitalis, arsenicum, caffeine, and crataegus oxyacantha.

CHAPTER XXXI.

ACUTE AORTITIS.

Definition:—This is an acute inflammatory process involving the aorta.

Etiology:—It is a rare affection and may occur during the course of any of the acute infectious diseases, or it may be a primary lesion apart from any acute, general disease. The acute diseases with which it has been related are, rheumatism, scarlet fever, measles, small-pox, and influenza; in some cases it has been associated with pregnancy, renal disease, syphilis and gout. It may arise independently of any general disease, but in these cases there is a history of a chronic disease.

Pathology:—The aorta is nearly always enlarged, presenting a fusiform or globular appearance. The inner surface is rough and uneven in appearance, there are patches which are soft in consistency and reddish or pink in color. Under the microscope the endothelium of the patches is seen to be swollen and infiltrated with leucocytes and flat, enlongated cells due to a proliferation of the connective tissue elements. The inflammation of the middle and outer coats is not as marked.

Symptoms:—Many times the symptoms are lost sight of as the result of the primary disease. The most frequent symptom is a sensation of tightness in the chest, that may pass into a permanent burning pain and simulate angina pectoris; but it has not the periods of complete remission that characterizes the true angina. These attacks may occur

at any time, during rest or exercise, and are of short or long duration. During the attack, the face becomes pale and wears an expression of intense anxiety, the skin is cold and clammy, the pulse is rapid, and the mental condition is one of anxiety. The feeling of uneasiness between the attacks has been described as a sensation of burning in the location of the aorta. The temperature is but little, if any, above the normal. The precordia gives no indication of the trouble within, apart from a displacement of the apex beat outward and downward.

Palpation:—Shows the cardiac impulse to be prolonged and increased in intensity.

Percussion:—May show an increased aortic and cardiac dullness.

Auscultation:—May reveal nothing apart from an accentuation of the second aortic sound. Frequently the first sound is accompanied by a systolic murmur, and later a diastolic murmur may be developed.

Diagnosis:—This is based upon the location of the pain and the symptoms indicating disease of the aorta. The intermissions of the pain in angina pectoris should differentiate it from aortitis.

Prognosis:—This is unfavorable; being absolutely hopeless in primary acute aortitis.

Treatment:—Absolute rest, with a light nutritious diet should be prescribed. Ice bags, or Leiter's tubes at times are of service to relieve the pain. During the anginal attacks, the nitrate of amyl or nitro glycerine are of some service, but not to the same extent as in cases of angina pectoris

due to fatty degeneration. The remedies are such as the general conditions demand.

CHRONIC AORTITIS.

This is a part of the general arterial sclerosis that affects the whole arterial system.

Etiology:— This is essentially a disease of advanced life. Heredity appears to be an important factor in its development in certain families, as they show degeneration of the arteries early in life. It is more common among men than women, and in those whose work demands prolonged physical strain. It is frequently associated with renal disease, gout, alcoholism and syphilis.

Pathology:—The lesions may be confined to the aorta, but more frequently they are but a part of a general disease of the arteries. In the early stages of its development there appear patches, which are grayish and gelatinous in appearance, becoming yellow and doughy in time, with a tendency to the deposit of lime salt. These patches have a tendency to erosion, and as a result to form ulcers. The atheromatous changes are very apt to be about the orifices of the various arterial branches. The middle and outer coats show that they are invaded by newly formed cells, and are vascularized and thickened. These changes render the aorta subject to aneurysm and the ulcers may give rise to embolism.

Symptoms:— The degenerative process usually extends beyond the aorta and may be observed in the brachial and temporal arteries, where it is indicated by the thickened, tortuous and rigid condition of the arteries, which appear like cords under the

palpating finger. The aorta is dilated at times to such an extent that pulsations may be felt in the second and third intercostal spaces to the right of the sternum, or dullness on percussion may be elicited. But more dependence is to be placed in auscultation in diagnosing dilatation of the aorta. The second aortic sound being low pitched, clanging or booming in character and appears prolonged. The aortic orifice may be dilated, giving rise to incompetency. A systolic murmur may be heard, due to thickening and roughening of the valves or calcareous deposits about the orifice. The patient often complains of uneasiness, weight or constriction with palpitation, breathlessness and paroxysms of cardiac asthma. Often there is a sub-sternal pain that extends out along the arteries, and also the sensation that the heart is going to stop.

An examination of the arteries shows the temporal to be rigid and tortuous, while those of the extremities are as twisted cords under the finger. The carotid and subclavian arteries pulsate excessively and the aorta is seen to give a well marked pulsation in the jugular fossa. The radial pulse has a feeling of fullness and tortuosity and is of a high tension. The pulse wave is not large but is sustained and dies away slowly. The apex beat is farther to the left than normal and there is the heaving, sustained impulse indicative of cardiac hypertrophy.

On auscultation there is an accentuation of the second aortic sound which is musical in character. If the case is of long standing there is usually some edema about the dependent parts. Aneurysm often develops as a result of the atheroma.

Diagnosis: — This is usually easy, except in those cases where it is local or latent.

Prognosis: — When once established it never disappears. The disease may be retarded and if taken in time, may be held in check and life be rendered comfortable.

Treatment:—This is the management of a case of arterial sclerosis. These patients should abstain from the use of alcohol in all forms. Their diet should be non-stimulating and contain little meat, but plenty of pure, soft water should be drank, but no water containing lime. They should have at least seven hours sleep each night, and if possible one hour after the mid-day meal. The skin should be kept in a healthy condition by a daily, warm, sponge bath. The bowels should be regulated by the food and exercise. All violent exercise should be avoided.

Arsenic iodide:—While this remedy has not received a proving that has developed its whole action, yet from clinical observation, it stands without a peer in the number of these cases in which it is indicated, and benefits. It is indicated in the vertigo that accompanies many of these cases. The heart is enlarged, its action is irregular and increased. The pulse has a shotty feeling under the finger, and there are slight anginal pains at times. In many of these cases the kidneys are involved, giving rise to chronic interstitial nephritis. The patient is chilly; he cannot endure cold weather, and his family history reveals a tendency to pulmonary tuberculosis. This remedy will control the degeneration and restore the vitality.

Plumbum:—When this remedy is indicated there is melancholy, gloom, anxiety or mental torpor. The bowels are obstinately constipated, the stool is in the form of balls; the abdomen has a hard feeling; the muscles are knotted and the navel and anus violently retracted. There is violent spasmodic palpitation of the heart with anxiety and difficult breathing. The pulse is slow, small and contracted, but it may be rapid.

Iodium:—This remedy produces a sensation as if the heart was squeezed, and of goneness or weakness of the chest. The pulse is accelerated by every exertion. There is degeneration of the arteries, extreme emaciation with great hunger. The patient has dark hair and eyes and cannot endure warmth.

Lithium iodide:—This remedy is indicated when in connection with the arterial degeneration, there is a history of rheumatism with soreness in the region of the heart. There is trembling and fluttering of the heart, the distress extending up between the shoulders and even to the head, where it is felt as a painful throbbing. This remedy is serviceable where there is the lithic acid diathesis with chronic nephritis.

Gold and sodium chloride:—This remedy is indicated in those cases where there is a syphilitic basis, or the patient is suffering from the effects of sexual abuses. Melancholy is present with a desire for death, the tongue is red and glazed. There is nervous dyspepsia, taking food increases the pain in the stomach and causes an evacuation of the bowels.

Strontium iodide: — This remedy is indicated where there is catarrhal asthma, chronic bronchitis,

or various pulmonary troubles. In order to receive the desired effect it must be used in doses of from five to ten grains.

Potassium or sodium iodide: — Have both been extensively used and abused in treatment of this condition. They will be found of service when the patient is very irritable, melancholy, with intellectual weakness. He is subject to syphilitic and mercurial headaches; and the syphilitic affections of the bones and periosteum; especially if he has been mercurialized.

Sabal serrulata (saw palmetto):—While there has not appeared in the meagre proving, anything to indicate that this remedy is of service in this disease, yet in my clinic, I have frequently seen its beneficial effects when given to old men suffering from sub-acute and chronic prostatitis, with difficult urination, and malnutrition with great emaciation.

CHAPTER XXXII.

ANEURYSM OF THE AORTA.

Definition:—An aneurysm is a pulsating tumor due to a dilatation of an artery, with the interior of which it is connected.

Etiology:—This is a disease of middle life, and seen most frequently among men whose work demands prolonged physical strain. The uric acid diathesis, rheumatism, syphilis and alcohol play an important part in the production of arterio-sclerosis and thus in aneurysm. In this connection obliterating endarteritis of the vasa vasorum should be mentioned. Increased blood pressure is among the exciting causes in the thoracic aorta, and traumatism in the abdominal aorta.

Pathology:—The existence of atheroma in every case of aneurysm of the aorta leaves no doubt of the association of the two processes. During the early stages both the inner and middle coats are thickened; while later, each is atrophied to such an extent that the outer coat practically forms the covering of the aneurysm. In cases of rupture it is the inner coat that ruptures first, then the middle, and later the outer covering ruptures. A fusiform aneurysm is a general dilatation of the aorta and is seen most frequently in the ascending and transverse portion of the arch. A saculated aneurysm is due to the giving way of a circumscribed portion of the arterial wall and may vary in size from a pea to that of a man's head. Within the aneurysmal sac the blood may be partially fluid, with old and new thrombi, the color and consistency of the

latter varying with age. The recent formations are soft, while later they become firmer or calcified, and of a yellow color. Occasionally, either by obliteration of the sac from deposits of blood within, or from closure of the orifice leading to it, a cure is completed. Of the aneurysms of the aorta, three-fourths are confined to the thoracic portion and one-fourth to the abdominal. Of those developing from the thoracic aorta, 60 per cent. are confined to the ascending portion, 30 per cent. to the transverse and 10 per cent. to the descending portion.

Symptoms:—Aneurysm, if small, may produce no symptoms. But when they become large, they then give rise to pain, palpitation and breathlessness. Anginal attacks are common, with pain radiating to one or both shoulders and arms, accompanied at times with fluttering and throbbing of the heart.

Inspection:—There is apt to be the pallor so frequently seen with disease of the aorta, and a pulsation at a point where it is not normally present; this is the most positive sign of aneurysm. It must be determined that the pulsation is not due to the heart or great blood vessels being in either an exposed or an abnormal position. The apex beat may be displaced according to the site and size of the aneurysm. If there is a bulging of the chest wall, it may be localized or diffused.

Palpation:—The apex beat may indicate hypertrophy of the heart, but not necessarily. On placing the hand on such a tumor, a pulsation is detected, which is expansile in character, and in some cases, is accompanied by a distinct thrill. By very

careful examination it may be determined that the pulsation of the tumor follows that of the apex beat.

Percussion: — Will outline the heart and show any change in its position or size, and also show a dullness, the result of aneurysm.

Auscultation: — Reveals a low pitched second sound, which if well marked, is loud and ringing and coincident with the diastolic shock.

The Pulse:—An aneurysm gives rise to a characteristic difference between the two radial pulses. The one affected is delayed, diminished in height, its duration is longer and subsidence more gradual than normal.

The digestive system may be affected by pressure upon the esophagus and difficulty in swallowing results. Pressure upon the stomach does not produce any marked symptoms, owing to the movable character of the abdominal viscera. Pressure upon the thoracic duct may interfere with the blood forming apparatus and emaciation result. Pressure upon the trachea, bronchi or lung will interfere with respiration and breathlessness, dyspnea, cough or hemoptysis result.

Trachial tugging is observed when the head is bent backward and the tissues on the anterior surface of the neck put on a tension; if the fingers are now placed between the cricoid and thyroid cartilages it will be found that the trachea is pulled downward with every cardiac contraction. This sign, while not pathognomonic of aneurysm, is often present when the transverse portion of the arch is involved.

Deglutition may be difficult, due to pressure upon tne esophagus. In some cases a localized perspiration is noticed, as well as areas of increased cutaneous temperature. The nervous system presents a variety of symptoms described as weight, tightness, soreness and pain; and paralysis of the laryngeal muscles, from pressure upon the vagus or recurrent laryngeal nerve is met with. The left vocal cord is the one most frequently affected, as that recurrent laryngeal nerve winds about the transverse portion of the arch of the aorta. If the right sub-clavian artery is involved, a similar condition may be met with on the right side.

Unilateral paralysis of the diaphragm may result from pressure on the phrenic nerve. Changes in the size of the pupils from pressure upon the sympathetic nerves are common occurrences. The sternum and ribs in front, and the spine and ribs behind, may undergo erosion and necrosis from pressure. When the aneurysm is confined to the ascending portion of the arch of the aorta, it gives rise to a pulsating tumor in the second and third intercostal space, to the right of the sternum. In those cases where the sac develops upon the posterior surface, the pulsations are not present. The apex beat is usually to the left and downward from the normal point. Palpation over the region of the sac gives two impulses, the first may be a thrill.

Percussion outlines an increased area of dullness, while auscultation reveals, usually, a systolic murmur followed by a short sound. The aneurysm may press upon the superior vena cava or right sub-clavian, and edema of the right side of the face and arm result. If the tumor is very large it may in-

terfere with the infereior vena cava and edema of the lower extremities result. Pain is a constant symptom and is dull and aching in character; should the aneurysm press upon a bone, it is boring, if upon a nerve trunk, it is neuralgic in character. The pain may be severe in the right arm and the muscles become atrophied. Aphonia is present at times, due to the implication of the right recurrent laryngeal nerve. Cough, dyspnea and breathlessness appear if there is much pressure upon the corresponding lung. When it is the transverse portion of the arch that is involved, the symptoms are more intense than in that just mentioned. This is due to the narrow antero-posterior diameter and as a result, greater pressure upon the structure by the aneurysm. Posteriorly there is the trachea and esophagus, which, when pressed upon, gives rise to cough, dyspnea and dysphagia. If the bronchi be pressed upon, bronchorrhea and dyspnea result. The recurrent laryngeal nerve on the left side may be implicated and aphonia result. If the aneurysm extends upward it may effect the sympathetic nerves, causing dilatation of the pupil if there is simple irritation, or contraction, if there is paralysis. It may press upon the thoracic duct and induce emaciation. Should it extend forward it will press upon the manubrium which becomes eroded and necrosed.

Aneurysm of the descending aorta, if close to the diaphragm, gives rise to a diffused pulsation which is accompanied by a thrill that is easily determined. Percussion shows the extent of the aneurysm; while auscultation usually shows a single sound or late systolic murmur. There is apt to be difficulty in swallowing, and dyspnea due to pres-

sure on the left lung; if the pressure is marked there may be a bloody expectoration, increased vocal fremitus, comparative dullness, bronchial breathing and other signs indicative of consolidation.

Aneurysm of the abdominal aorta is accessible to physical examination, and as a result, it is not so difficult to make out the symptoms. The pulsating tumor may be seen and felt. Auscultation will reveal a systolic murmur. The digestive function may be interfered with as well as the intestines. If it should press upon the liver, icterus is often present.

Diagnosis:—The recognition of an aneurysm connected with the thoracic aorta is often difficult. The diagnosis must be based upon the symptoms as already enumerated. The presence of arterio-sclerosis in an individual from thirty to forty-five years of age; whose occupation demands prolonged muscular strain; when taken in connection with those symptoms that result from pressure upon different structures, as pain, dyspnea, aphonia, cough with bronchorrhea, edema and physical signs of a pulsating tumor; the increased area of cardiac dullness; a systolic murmur with a systolic and diastolic shock, are sufficient to pronounce it a case of aneurysm. Tracheal tugging may be noticed, but it is a symptom of secondary importance, as it is present with other conditions. The diagnosis is especially difficult when the aneurysm is small, where there are no symptoms apart from those of pressure, and in those cases where the symptoms are not constant.

Differential Diagnosis: — Mediastinal tumors produce all of the pressure symptoms of an

aneurysm, but they are not apt to produce the bulging or pulsation found in aneurysm. When they do produce pulsation, it is quicker and not so heaving and steady as in aneurysm, and they do not possess the systolic and diastolic shock of aneurysm, nor is the heart necessarily affected. Mediastinal abscess gives the history of fever and evidence of septicemia.

Pulsating empyema is situated on the left side at the base of the lung, extends over a large superficial area and there is no murmur or double shock as in aneurysm. The pulse and pressure symptoms of aneurysm are wanting. In pulmonary tuberculosis the fever and emaciation are more pronounced, the bacillus tuberculosis are present in the sputum, and the cardiac-vascular symptoms indicating aneurysm are absent. It should be remembered that cases of hypertrophy of the pancreas may compress the abdominal aorta and give rise to a murmur heard in the line of the aorta, below the point of compression. It also gives rise to pain in the region of the stomach, felt immediately after eating; there are also pains due to pressure upon nerve roots, that may give rise to the sensation of a girdle. A pulsation is noticed in the region of the stomach, due to the action of the aorta upon the enlarged pancreas.

Prognosis:—This is never good, but depends upon the situation of the aneurysm, the direction in which it extends, its shape, and whether it is extending slowly or rapidly. Aneurysms of the intra-pericardial portion of the aorta are especially dangerous. There is but little to support the aorta at this point and it has a greater degree of move-

ment than in other parts; as a result, rupture of the aneurysm takes place early. In those situated above the attachment of the pericardium the prognosis is better, especially in those that extend forward. It is not so good in those extending backward on account of the possible pressure upon the root of the lung, vena cava or pneumogastric nerve. When the transverse portion of the arch is involved there is the danger from rupture, also from pressure upon important structures, and asphyxia and pulmonary collapse result. If the aneurysm extends forward there is not so much danger.

Sacculated aneurysms, while they develop rapidly and may prove fatal, the mouth of the sac does not develop so rapidly, as a result the current of blood is slower within the sac and a deposit of fibrin may take place. The development of the aneurysm is thus checked and a cure may result. In the fusiform variety, while the development is slower its shape does not permit of a deposit of fibrin and as a result there is no tendency to repair.

Treatment:—This is not satisfactory. The object is to render the blood pressure as low as possible, to slow the circulation and render it equable. In order to accomplish this, absolute rest in bed for at least two months is imperative. If the use of the bed pan causes much straining it may be advisable to have the patient use a commode, but he should not be allowed to sit up for anything else. The rest should not only be physical but mental.

Careful attention should be devoted to the diet. The liquids should be reduced as far as possible, not more than forty ounces being taken in twenty-four hours. The amount of food taken at each

meal should be about the same, that there may be no excessive repletion and depletion, and as a result, no marked change of circulation. The food taken should be concentrated, at least not bulky, like potatoes. The object being the reduction of the volume of blood, that the pressure within the aneurysmal sac may be lessened and the blood fibrin readily deposited. Constipation must be avoided as its effects are very injurious to these patients. Insomnia at times is very annoying and will tax the physician's therapeutical resources. When as the result of the pressure, pain is severe, venesection will be found to afford an immediate relief by lowering the blood pressure within the aneurysm, and allowing a deposit of fibrin. The introduction of a coil of wire into the sac or the employment of the pole of a galvanic battery is attended with danger of embolism. The iodide of potassium has been used with a degree of success in increasing doses of from twenty to forty grains three times a day; just how its beneficial effects are produced is difficult to say, but probably it is by depressing the action of the heart, promoting diuresis and inspissation of the blood.

Veratrum vir.:—This drug has the power of reducing the pulse rate when given in five-drop doses of the tincture every three hours.

Gallic acid:—In one half drachm doses, three times a day, has cured in a few cases.

Ergot:—This has been used with a degree of success in aneurysm. When used it has been injected around the tumor.

Aconite, digitalis, gelsemium, laurocerasus, have

often been of service, but must be used in full doses.

Compression has benefited many cases, an account of its use may be found in any surgery.

Baryta muriatica: — This remedy and the other preparations of baryta are reported to have cured cases of aneurysm. In their proving they have developed palpitation, dyspnea, oppression with irregular and forcible action of the heart.

When the pain cannot be relieved by other remedies, five grains of lactucarium at night, will often give a good night's rest with but little, if any, bad after effects.

RUPTURE OF THE AORTA.

While this condition is not common, yet it has been observed from time to time where there was no aneurysm; but there was usually a degenerated condition of the wall of the aorta.

CHAPTER XXXIII.

ACUTE ARTERITIS.

Definition:—This is an acute inflammation of the wall of an artery.

Etiology: — It is most frequently the result of some infective process as pyemia, ulcerative endocarditis and enteric fever, and in arteries that traverse an area of suppurative inflammation.

Pathology: — When the infection extends from without, the outer and then the middle coats are infiltrated with round cells. This process may extend through all three of the coverings and leads to perforation of the wall of the vessel and hemorrhage. The inner coat, not having any independent blood vessels, is involved indirectly by an emigration of leucocytes that infiltrate it. When the infection starts from within as the result of a softening thrombus or an infective embolism, there is a necrotic destruction of the inner coat, which is followed by an infiltration of the middle and outer coats with round cells. The acute productive form of arteritis is usually the result of acute tissue changes surrounding the arteries, that lead to over-growth of connective tissue.

Symptoms:—Acute arteritis may occur during an acute primary lesion or during convalesence. The most pronounced symptom is a localized pain in the affected region which is worse from motion and pressure. The artery appears as a cord under the finger, is tender to the touch, the pulse is obliterated and there is coldness of the skin, and

swelling. The temperature of the part is lowered and gangrene may follow.

Diagnosis: — This is often difficult to make; but tenderness along the course of the artery; a hard cord-like feeling under the finger when the vessel is pressed upon; at times, obliteration of the artery; disappearance of the pulse and the appearance of gangrene in the part which the artery supplies; all point to this as the disease.

Prognosis: — This is grave; but if the process can be controlled and the infection stopped, it is not so grave.

Treatment: — This consists in the management of the primary lesion.

ARTERIO-SCLEROSIS.

Definition:—This is a hyaline degeneration of the structures composing the walls of the arteries, with hyperplasia and a substitution of connective for muscular tissue; and as a result, associated with contraction and induration of the artery.

Etiology:—This being a senile, degenerative change, age, together with sex, syphilis, alcohol, gout and rheumatism are most fruitful causes. It has been observed that the middle and inner coat of an artery increases in thickness with advancing years. This last statement must be taken with a degree of latitude, for cases will be found in which the arteries are as hard in one at forty as in another at sixty-five. The subject of its appearance depends much upon hereditary tendencies and whether the life of the individual has been one of self-denial or self-indulgence. Cases are met with

in which there are no indications of sclerosis, but they are the exception, as in nearly all cases there is a degree of degeneration in some of the arteries, if not in all. At times these arterial changes will be noticed in the young, when it is usually associated with a low grade of mental development.

Males suffer from this disease more than females, from the fact that a greater number of the former are addicted to the use of alcohol, suffer from syphilis, gout, rheumatism, and their work demands a more prolonged physical strain. Alcohol produces these results in different ways, it accelerates the heart's action by disturbing the digestive function of both the stomach and the liver; and if in excess, it so poisons the blood that it acts as an irritant.

Syphilis is an important factor in the etiology as is borne out in the reports of military life. Its effects may be circumscribed or diffused. Rheumatism has been so frequently observed in those suffering with this disease, that it is recognized as one of the causes. Gout, diabetes, and lead poisoning have been the exciting causes. Of the acute infectious diseases that act as causes are diphtheria, scarlet fever, influenza, malaria and typhoid fever. Over-feeding and drinking give rise to the conditions that favor its development when associated with a sedentary life. Hard work by subjecting the heart to strain and hypertrophy, leads to an increased tension in the blood vessels and thus becomes a cause.

Pathology:—This process may be diffused, embracing nearly all of the arterial system, or it may

be circumscribed. When the latter condition prevails, nodular elevations are to be seen upon the inner lining of the vessel. These vary in size from a pin point to that of a small coin; they are raised a little above the surface; early, they are of a translucent, grayish color, and are covered with a smooth, unaltered endothelium. Later, these nodules undergo degenerative changes, which may be, either a hardening due to infiltration with calcareous material, which renders them of a light color; or the focus may soften and a necrotic atheromatous ulcer result; calcareous changes may then follow.

These areas of degeneration may be few in number and separated from each other, or they may be continuous. When diffused, they are most frequent in the small vessels and in elderly subjects. In the diffused form the process is found distributed through the arterial system, with the nodular form involving the aorta and larger vessels. In this diffused form the inner coat of the artery is much thickened and there is an extensive proliferation of the sub-endothelial connective tissue, together with a hyaline degeneration of the middle coat of the larger vessels. In the later stages, the muscular and elastic tissue may have disappeared altogether and a calcareous deposit may take place, giving the wall of the vessel a rigid feeling. Atheromatous abscesses appear, especially in the aged, and by rupturing, give rise to ulcers.

Owing to a lack of nutrition from a narrowing of the vessels, atrophy of the heart, kidney or liver may result; but hypertrophy of the heart is

more commonly met with. When the coronary arteries are involved the myocardium is liable to suffer; undergoing a fibrous degeneration and all the cusps may become sclerotic. The pulmonary arteries show the same changes and with the other vessels may show aneurysms, due to a weakened condition. Owing to the increased resistance to the blood current, the arterial tension is increased and the part taken by the vessels in propelling the blood is lost, with cardiac hypertrophy as a result.

Symptoms: — The external signs are never a guide by which to judge of the extent of arterio-sclerosis, as cases have been frequently met with at autopsies, in which there was calcareous degeneration of the aorta and yet the vessels of the extremities gave no indications of it; while in other cases the vessels showed the hardness and felt like bone; an examination showed their serpentine course and elongation. In those cases where the aorta is involved and a degree of contraction takes place, the body as a whole, or the part supplied by any artery that is much involved, will show a progressive emaciation. As the arterial tension increases, as it will sooner or later, hypertrophy of the heart ensues. This is indicated by the increased cardiac impulse, the displacement of the apex beat to the left and downward, the increased diameter of the heart and the accentuation of the second aortic sound.

When the aorta is markedly involved in the process and as a result elongated; at times, it will be noticed that the apex beat is within the nipple line while the patient is sitting up, but that it

passes outward as far as the axillary line when the patient lies upon the left side. In cases where the vessels leading from the heart are atheromatous as well as the cardiac valves, the sounds of the heart are propagated very distinctly along these atheromatous arteries to a great distance. The second aortic sound is accentuated; this is dependent upon the dilatation of the aorta and the increased tension within it. As the aorta is dilated, the aortic ring is also soon dilated, and aortic incompetency follows.

When the coronary arteries are involved, palpitation of the heart occurs after meals, with dyspnea upon the slightest exertion, so that patients have to stop walking or promenading. Cases have been observed in which patients have died, supposedly due to this disease, during the act of coitus. In cases of mitral stenosis, sclerosis of the pulmonary artery has frequently been observed, producing a chronic stasis of the lung. In the the kidney this disease gives rise to a gradual atrophy and sign of cirrhosis. When it involves the arteries of the brain it appears at first in an indefinite way; the individual is conscious that he does not perform his mental work as easily as formerly, and it is observed that it is not of as high an order; it requires some will force to enable him to do his usual labor and, while the mind may remain clear and vigorous, there are attacks of melancholia, hypochondria and irritability.

As the process advances insomnia appears, the mental condition weakens, there is vertigo, and in time, softening of the brain appears. A miliary

aneurysm may rupture at any time, giving rise to apoplexy and hemiplegia. In the extremities the symptoms depend upon the stage of the disease, but are indicated by coldness or cyanosis and ultimately gangrene.

Diagnosis: — When the changes wrought by this disease can be observed or felt, the diagnosis becomes easy; but where they are only presumptive or impossible to make out; an increased arterial tension, a hardening of the arteries to the feel, an accentuation of the second aortic sound and a hypertrophy of the left ventricle of the heart, form a characteristic group of symptoms. The increased arterial tension is usually one of the first evidences of the changes that are taking place; with this, dyspnea soon appears, with palpitation of the heart, coldness of the extremities and marked headaches. In many cases a difference is noticed in the radial pulses, due to a disease of one of the arteries. When the thoracic aorta is most involved there are attacks of angina pectoris or distress in the cardiac region, with the pains radiating to the left shoulder and arm, with difficulty in breathing. When the peripheral arteries are affected, there are sensations of numbness, formication, paresthesia and cramps present. It is not easy to recognize the arterio-sclerotic shrunken kidney, but a large amount of clear urine, with low specific gravity, little albumen, and indications of stasis, with hypertrophy of the heart, should lead to this as the probable cause. Senile gangrene frequently shows this as the cause. The patient is pale, thin, yellow and shows the arcus senilis early.

Prognosis:—This varies according to the seat of the lesion and the extent of the changes. When any one of the important organs of the body shows unmistakable signs of the disease, the prognosis becomes more unfavorable. Although one may live for a long time with marked degeneration, the disease is a chronic one, is progressive and may terminate life suddenly, as in cases of apoplexy or rupture of the aorta, or it may be a very slow form of death. The statement that "a man is as old as his arteries" is ever true.

Treatment:—There is no disease that demands of the physician a more thorough investigation of every phase of the patient's life than does this one; and there is no disease in which the patient must more thoroughly observe every hygienic law and physiological condition, that he may stop its inroads upon his vitality. All the conditions that interfere with the nutrition of the body must be avoided. Every habit should be inquired into carefully and if found to be other than is conducive to a normal condition, it should be corrected.

The diet should be investigated, a meat diet, especially the red meat, should not be used, beef tea, meat extracts and preparations of that class should be used sparingly, if at all. Fish may be used occasionally, but in moderation. The diet should be non-stimulating. Milk, especially skimmed milk, is excellent in those cases where the kidneys are involved and there is a tendency to gout and rheumatism. The only objection to a milk diet is in those cases where there is a calcareous infiltration, as the lime in the milk favors this condition. Water should be taken in abund-

ance, both pure and soda water. Liquors in all forms should be avoided; if this is found to be impossible, all sweet wines, champagnes and burgundies should be eliminated, and only the lighter wines used.

The bowels should be thoroughly evacuated at least once each day. The skin must be kept in a hygienic condition. If obesity is present it should be reduced and avoided in the future. Excitement and bodily effort are dangerous; many cases of sudden death during coitus are attributed to this as the cause. The patient should cultivate a cheerful disposition, as irritation wears upon the heart and then upon the arteries. The patient must not be indolent but should have a degree of exercise, not violent, and something to keep the mind active and engaged. They should retire early and rise early.

The reader is referred to the following remedies which were considered under the subject of Chronic Aortitis: Arsenic iodide, plumbum iodide. Lithium iodide, gold and sodium chloride, strontium iodide, iodides of potassium and sodium, sabal serrulata. While this group contains the remedies most frequently indicated, the following may be necessary at times:

Cuprum sulph. 2x:—In syphilitic cases, where many of the symptoms calling for cuprum are present. It should be given night and morning for a long period.

Plumbum iodide, 3x:—When interstitial nephritis is present, with constipation and colicky pains.

Zinc phosphide:—Presents many of the symptoms of cerebral vertigo and should be compared with arsenic iodide in this condition.

Colchicine:—Where there is a history of gout and chronic rheumatism this preparation will be found more reliable than colchium, when the symptoms of the latter are present.

Glonoine:—This remedy will give temporary relief in reducing the extreme vascular tension. Patients soon become used to its action and as a result it should be a last resort. Drop doses of the first centesimal (*i. e.* one per cent.) solution is used.

When gangrene appears, lachesis, secale and arsenicum should be studied.

For the treatment of the various divisions of this disease, the reader is referred to works on the particular organ involved. As it is usually well advanced before the physician is consulted, the best that can be expected is to stay the process and compensate in part for the injury done.

ARTERIAL DEGENERATION.

Fatty degeneration:—This is most frequently met with in those who are past the meridian of life; but it may be met with in chlorotic girls.

While any of the coats of the arteries may be affected, it is most frequently seen in the inner coat, where it forms a part of the atheromatous process. When it occurs as an independent lesion it most frequently results from toxic agents in the blood, and as the result of disturbances of the circulation. The microscope may reveal small, yellow or white spots, or streaks in the endothelium; the endothelial cells may be granular or filled with oil drops. In severe cases there may be erosion of the endothelial surface, and the mus-

cular elements of the middle coat may show fatty degeneration. This form of degeneration may lead to a rupture of the blood vessel or to a calcareous infiltration.

Hyaline degeneration:—This is seen involving the inner coat of the smaller arteries, where it is often but the first evidence of a beginning degeneration. It is frequently the result of infectious fevers or intoxication, when the small arteries suffer most.

ARTERIAL INFILTRATION.

Calcareous Infiltration:—This is one of the terminations of the atheromatous changes; but a complete calcification of the artery may occur apart from any previous degeneration. This infiltration may occur as a result of a thrombus becoming organized, or where there is some bone disease present that results in destruction of the bone and a loading of the blood with lime salts.

Amyloid Infiltration: — This results from syphilis, tuberculosis, chronic lead poisoning or suppuration, especially that of a bone. The smaller and medium sized arteries are the ones most affected by infiltration which leads to weakening of the arterial walls and aneurysm. This form of infiltration is frequently found in other organs of the body.

THE CORONARY ARTERIES.

The coronary arteries are subject to the same diseases as the other arteries of the body, as atheroma, fatty and calcareous degenerations;

aneurysm, etc. As these arteries are filled by the recoil of the aorta, it is evident that any disease of the latter or of the aortic orifice will interfere with their nutrition. There are no positive symptoms by which these changes can be detected during life.

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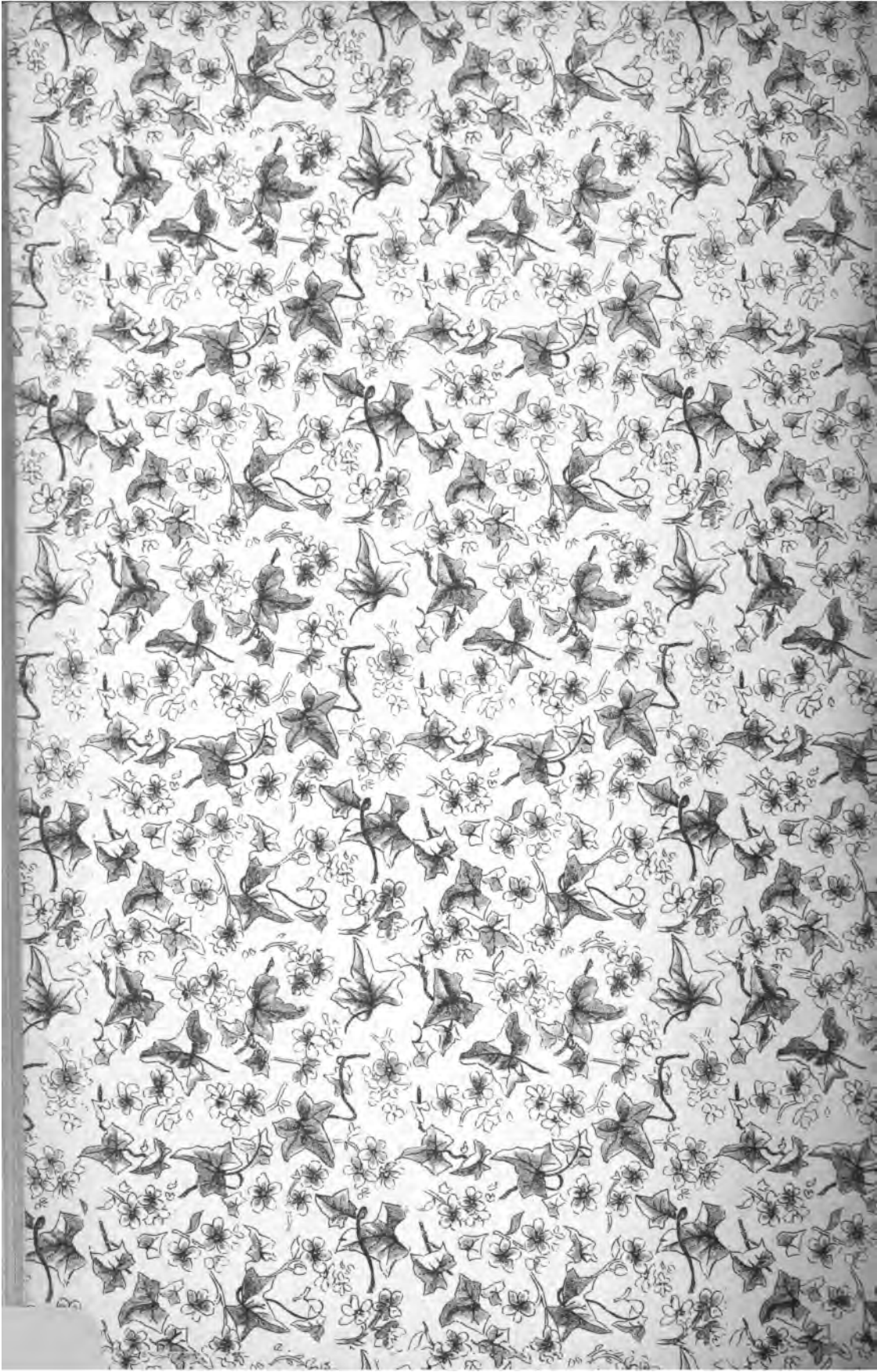
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